

**It's Important to Know In Time**  
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**The Newspaper of the Industry**

## Inside Dope

By George F. Taubeneck

**Our Boys Come Home**  
Business Isn't Getting Rich  
Miles Per Gallon  
Madame Casey  
Equal Pay  
Export News

### Our Boys Come Home

It is with much pride and considerable relief that we report on the recent safe arrival within these United States of three of our boys-in-service, following dangerous missions abroad.

Lieut. (j.g.) Bob Nixon, formerly our finance administrator, is now here for a tour of shore duty, after almost two years spent in the South Pacific. All that time he was on a minesweeper, of which he eventually was placed in command.

Sgt. Jim McCallum, previously an assistant editor, who has been flying all over the Mediterranean area as a photographer in a Flying Fortress, came back for rest and relaxation in Florida.

And former Circulation Manager Ed Henderson, after taking all the Germans could dish out in the Atlantic and the Japs in the Pacific, is back in this country studying for his commission as an ensign. For a man to rise from the ranks in the Navy is an extraordinary feat, and we're mighty proud of him.

Ed's experiences have been hair-raising. His destroyer was in the forefront of the forces which successfully invaded North Africa; and his most recent experiences were in connection with the invasion of the Jap-held Marshall Islands.

Lieut. (j.g.) Jack Adams, our Business Manager, also saw the shooting in that invasion.

It is with no little regret that we are forced to announce that the mighty General Motors Corp. has been stolen from us Sgt. Dick Neumann, the New Guinea hero who has been mentioned often in this column. Their offer to Dick was simply too good for him to turn down.

### Business Isn't Getting Rich

Despite isolated instances, and labor's kept statisticians, examination of current corporation reports reveals that business isn't getting rich out of the war. Taken as a whole, corporations appear to be losing ground.

After studying the reports of 110 manufacturers whose individual assets are over five million dollars, the National City Bank reports a sharp decline in the current ratio of current assets to current liabilities.

In 1940, this ratio was 4.31. For 1943, the ratio had dropped to 2.43.

This bank also notes that the net after taxes has dropped notwithstanding gigantic increases in gross sales. In 1940 it found that 925 corporations reported a net income after taxes of \$1.5 million. For 1943, 730 corporations had a net after taxes of \$1.1 million.

Dividend payments have been falling off, too. Faced with sharply increased taxes, higher living costs, and reduced incomes, the coupon clippers haven't been faring so well.

### Miles Per Gallon

It's entirely possible that our supposedly dwindling oil resources may last a lot longer than the pessimists now believe, if developments in gasoline economy continue to progress so satisfactorily.

For example, Detroit buses have been testing a "mystery fluid" called

# Air Conditioning & Refrigeration

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**THE NEWS**  
Technical Governmental

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**'Written To Be Read on Arrival'**

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at Detroit, Michigan

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## Special Procedure Holds on Deferment Of Men Under 26

WASHINGTON, D. C.—At last report no final decision had been reached by the War Manpower Commission's Committee of Manpower Claimants as to just what occupations would be considered critical enough to permit some deferments for men under 26 years of age.

In the meantime, the interim procedure holds good whereby a specially designated representative of the War Production Board in each state may endorse a deferment request on form 42-A Special.

The criteria for the essentiality of a man under 26 years of age is that: "Recommendations for deferment of registrants under 26 engaged in critical production or service will be limited to specific individuals engaged in work which requires extreme or specialized skill or knowledge of a high educational qualification, and then only when the individual is irreplaceable from other less urgent work within the plant or by recruitment."

In the case of a refrigeration repairman the individual, to qualify, would have to be the last remaining barrier in the area which he serves against the complete failure of the

(Concluded on Page 32, Column 1)

## Jobbers Announce Meeting Program

CHICAGO—Tentative program for the meeting of the National Refrigeration Supply Jobbers Assn. April 25-26 at the Stevens hotel in Chicago has been announced by the program committee consisting of L. C. Keely (chairman), Otto A. Friemel, and Frank S. Langsenkamp, Jr.

The jobbers association will hold a closed meeting on Tuesday, April 25, and a joint industry conference with Refrigeration Equipment Manufacturers Assn. on April 26. A number of government officials are scheduled to speak at the joint meeting program.

Following is the proposed program:

### APRIL 25

(Morning)  
Meeting Called to Order, Harry Alter, president.

President's Report, Harry Alter.  
"Sound Business and Credit Tactics for a Refrigeration Parts Jobber," T. I. Glou, Central Service Supply Co., Syracuse, N. Y.

"WPB and the Industry," Sterling (Concluded on Page 32, Column 2)

## Hughes Heads Advertising Of Westinghouse Big Air Conditioning Line

JERSEY CITY, N. J.—Thomas A. Hughes has been appointed manager of air conditioning advertising at Westinghouse Electric Elevator Co. here, announces Ross Rathbun, manager of air conditioning.

Mr. Hughes has been for almost 20 years a well-known figure in advertising, sales promotion, and marketing new products in the office equipment field. Before he joined Westinghouse he was assistant advertising manager and sales promotion manager of the Underwood Elliott Fisher Co. Prior to his association with the equipment field he was a member of the advertising staff of the Hyatt Roller Bearing Co.

Mr. Hughes was born in Harrison, N. J., and received his early education in that community. He later studied business administration in the College of New York university.

## New Committee Setup Organized In Training Drive

**Coordinators To Aid Kromer; USES Favors Veterans as Trainees**

WASHINGTON, D. C.—The National Refrigeration Service Manpower Committee met in Washington March 28 and 29, during which time conferences were held with officials of a number of government agencies on the procurement and training of new men, and deferment of experienced repairmen.

Since March 29 was the deadline for a presentation to the especially appointed Manpower Committee on the occupational deferment of men under 26 years of age, the refrigeration group worked overtime to prepare the facts on men in this age bracket employed in vital refrigeration repair work. (The text of the presentation is published at the conclusion of this article.)

During its Washington meeting the group made some changes in its own organization. The committee will continue to function under a new name "The National Refrigeration Service Council." John Wyllie, Jr. of Temprite Products Corp. has resumed the chairmanship of the group and appointed the following new members to the Council:

Harry Alter, Emerson Brandt, and Phil Redeker.

Each of these new members has been appointed a National Coordinator and is delegated to assist Local Councils with some main phase of refrigeration service manpower problems. W. Ray Kromer remains as National Training Director and Principal Coordinator, and will continue to operate the administrative office at 1835 E. 24th St., Cleveland, Ohio.

Harry Alter, president, the Harry Alter Co., 1728 S. Michigan Ave., Chicago, will function as coordinator of Parts, Supplies, and Priorities, and may be contacted by local councils on problems of this nature.

Emerson Brandt of Nickerson & Collins, 435 N. Waller St., Chicago (publishers of "Refrigeration Service Engineer") is coordinator of wage and price problems, and should be contacted by local councils when endeavors to adjust wages and prices at the local level have proved unsuccessful.

Phil Redeker, managing editor of AIR CONDITIONING & REFRIGERATION NEWS, 5229 Cass Ave., Detroit, will be coordinator of Selective Service problems and may be contacted when all efforts for deferment of a correctly qualified man at the local level have been exhausted.

Warren Farr, Refrigeration Maintenance Corp., 1127 Carnegie Ave., Cleveland, a member of the original committee, is coordinator of procurement and training. He will be available to assist local councils in meeting their problems of procurement of trainees and assist in the solution of training problems that may arise.

Mr. Kromer, reporting generally on the program, stated that latest reports received at the administrative headquarters in Cleveland revealed that approximately 70 schools were now set up to offer courses in accordance with the aims of the training program. There are more than 130 coordinators set up to foster the establishment of training programs, he said.

A representative of the U. S. Employment Service who met with the Service Manpower Committee said that while efforts were being made to funnel discharged veterans into essential occupations, no "priority" on their service was being given to war plants, and there was no reason

(Concluded on Page 4, Column 1)

## Vice President



CHARLES T. LAWSON

## Lawson Is Promoted By Nash-Kelvinator

DETROIT—Charles T. Lawson, general sales manager of the Kelvinator division, has been appointed a vice-president of the Nash-Kelvinator Corp., it was announced this week by George W. Mason, president.

As vice president in charge of sales for the Kelvinator Division, Lawson's broadened responsibilities, according to Mason, will better enable him to plan and execute a program of expansion for Kelvinator in the major appliance field.

Mr. Lawson has been with Kelvinator since 1939, only interrupting his sales activities for a period early in the war to participate in the company's extensive war production program.

Prior to joining Kelvinator, Mr. Lawson, since 1932, has been an official of Frigidaire, becoming household sales manager in 1934. He was general sales manager of the General Motors Radio Corp. in Dayton, Ohio, for three years prior to 1932.

During the last war Mr. Lawson served as a Captain in the Second Division, Marine, AEF. Following the war he was associated with the Westinghouse company until 1921, leaving to become general sales manager and later vice president of the Day Fan Electric Co., Dayton, Ohio.

Mr. Lawson, who is a native of Virginia, holds degrees in both Mechanical and Electrical Engineering from Virginia Polytechnic Institute.

## Financial Rating Suit Of Tyler Is Closed

GRAND RAPIDS, Mich.—The \$55,000 lawsuit brought against Dun & Bradstreet by the Tyler Fixture Co., manufacturer of commercial refrigerators, has been dismissed by stipulation in Federal Court.

The suit charged that Dun and Bradstreet erroneously reported Tyler Fixture Corp. as "going out of business," whereas it actually had suspended production of peacetime goods on order of the government.

## Consumer Goods at Rate of '39 Seen For This Year

WASHINGTON, D. C.—Latest word from the War Production Board facts-and-figures boys regarding reconversion to consumer goods is that civilian goods production at 1939 levels is possible in 1944.

Two specific exceptions to this general statement, declared the researchers, are the automobile and home radio industries, which are too heavily engaged in producing instruments of war.

The WPB men think, however, that reconversion may be even more difficult than was conversion. More aid is sought from industry committees on the problem.

## WPB Seeks Data On Release of Cabinet Items

**Advisory Group Segments To Study Freezer Units, Beverage Cooler Needs**

WASHINGTON, D. C.—Looking forward to eventual relaxation of present restrictions on the production of certain refrigeration items such as ice cream and farm freezers, beverage cooling cabinets and like equipment, the General Refrigeration and Air Conditioning Industry Advisory Committee has endorsed a report from its Program Committee setting the pattern for consideration of both present and future studies of segments of the industry, WPB reported April 1.

The pattern of study, as recommended by the Program Committee, is (1) consideration of the production permitted under the present WPB policy, and (2) a procedure for study of products and their relation to requirements under various stages of future material relaxations.

The possibility that "Freon-22" may have to be restricted as a result of current shortage of production facilities was also discussed at the meeting. This type of refrigerant gas is used where extremely low temperatures are required, such as for stratosphere chambers and metal shrinking operations.

The meeting was the first attended by the revised General Committee, which has been expanded to include 18 members of the industry. The full committee now consists of:

W. H. Aubrey, Waynesboro, Pa.; Paul H. Brennan, Dayton, Ohio; Frank H. Faust, Bloomfield, N. J.; Donald French, Syracuse, N. Y.; H. F. Hildreth, East Springfield, Mass.; C. V. Hill, Jr., Trenton, N. J.; H. T. Jarvis, Los Angeles, Calif.; Wayne B. Jordan, Chicago, Ill.; J. S. Archibald, Jr., Buffalo, N. Y.; R. R. Jamison, West Chester, Pa.; Charles Knox, Omaha, Neb.; N. C. Nance, York, Pa.; T. S. Pendegast, Marion, Ohio; A. B. Schellenberg, St. Louis, Mo.; C. E. Scott, Buffalo, N. Y.; F. K. Smith, Tecumseh, Mich.; W. L. Morrison, North Chicago, Ill.; E. R. Legg, Detroit, Mich.

## Filter Fire, Not Gas, Drove Passengers From Pullman

WASHINGTON, D. C.—Smoke from fire which broke out in the oiled filter pads of a Pullman car of a Seaboard Airline Railway train the morning of April 2 temporarily hospitalized nine passengers and led to erroneous reports of a near-disaster caused by "gas escaping from a break in the air-conditioning." First newspaper reports said that some sort of "gas" had caused the trouble and that the men had been saved when a Negro porter on the Pullman car awoke to the danger and got the passengers out. Later, the following statement was made: "Pullman Car Co. and Washington Terminal officials reported that it was smoke from a burning pad in a sleeping car air conditioning system which overcame nine persons early Sunday morning. All were discharged from hospitals after receiving oxygen treatment." Pullman officials said that all air conditioned cars have oiled filter pads to screen out dust from the outside air sucked into the cars by fans. One of the pads ignited from undetermined causes and the fans rapidly spread the smoke."

## WPB Change Permits More Aluminum Uses

WASHINGTON, D. C.—Additional uses of aluminum for products essential to the war effort have been allowed by WPB. Such uses extend to all products and equipment for the military services when the government specifications call for aluminum. This action has been taken by amending Supplementary Order M-1.

In addition to the military uses, but subject to some restrictions, aluminum may be used in automotive trucks and trailers, commercial communication equipment, fire-fighting equipment, protective signal and alarm equipment, commercial food processing machinery, industrial fans and blowers, industrial machines, industrial safety equipment, industrial spray guns and grease guns, engineering instruments, safety control and heating control instruments, internal combustion engines, jigs and fixtures for industrial production, industrial type lighting equipment, molds for the manufacture and repair of rubber products, medical, dental, and ophthalmic instruments, experimental purposes and closures for certain food and drug products.

Although the supply of aluminum has increased, its use is being permitted only for products which contribute materially to the war program. The military services have been returning to aluminum where substitute material had been used. Relaxation of civilian production will not be permitted at present, WPB declared.

## F. T. Goes Takes Charge Of Vilter Mfg Co.



F. T. GOES

Was recently elected president of Vilter to succeed the late William O. Vilter. Mr. Goes had been vice president.

## Poss Named Advertising Director of Peerless

MARION, Ind.—Edward Poss, a member of OPA's Chicago staff, has been appointed advertising director for Peerless of America, Inc., here, it was announced recently.

## Vancouver, B.C. Urged To Expand Facilities For Cold Storage

VANCOUVER, B. C., Canada—Warning that cold storage facilities at Vancouver, B. C., must be greatly increased if the city is to meet war requirements and compete with other cities in handling perishable products, was sounded in a lengthy report submitted to the City Council recently by Market Commissioner W. J. McGuigan.

He suggested the Dominion government be asked to subsidize private interests in development of more cold storage space, which he argued is vital in prosecution of the Pacific war and a prime necessity in time of peace.

"To delay this vital development much longer simply means we are throwing away to rival cities an opportunity to render a long overdue service of tremendous possibilities," he said.

Mr. McGuigan asserted it is a serious indictment of the city that there is "scarcely room for one week's supply of perishable food available in storage."

He added Vancouver is the only port on the Pacific Coast without tidewater cold storage facilities to handle perishable goods.

Aldermen Charles Jones and H. L. Corey felt Vancouver victory gardeners also would be greatly encouraged if private cold storage lockers were available for storage of garden produce.

## Regulation W Will Likely Be Continued Through Reconversion, Officials Say

WASHINGTON, D. C.—Attacks on Regulation W by the Consumer Credit Institute and others brought a warning from the Federal Reserve Board that the credit regulation would probably be carried through the postwar reconversion period.

Charges by the Credit Institute that Regulation W results in "rationing by the size of the pocketbook, discrimination against the average worker and in favor of the man who can pay cash for durable goods, and a denial of sufficient credit to homeowners who need credit for home maintenance" elicited the reply by an FRB spokesman that opponents of the regulation were installment plan "lifers," and charge account "parasites."

The regulation will be kept in force as long as the need exists, this spokesman declared, and he predicted that tight credit controls will doubtless be required for some time after the war.

"It is entirely a matter of judgment," he explained. "When there are enough civilian goods to match the money supply, then credit control

will not be needed as an anti-inflation device."

Whatever amendments the Federal Reserve Board makes or plans for Regulation W at the present time are merely to improve operation of the regulation, not change its terms, the spokesman added.

Complaining that Regulation W was enacted before Pearl Harbor to retard the inflationary trend until price control and rationing were established, the Consumer Credit Institute claims that the regulation has been needlessly continued in the face of price and ration controls and the virtual complete disappearance of heavy consumer durable goods from the market.

The regulation has caused one labor leader to say, "Regulation W does not control prices but a method of purchase," complains the Credit Institute, adding that "the effect of this regulation on inflation has been small. Merchandise available to the consumer should have been rationed but not by the size of the pocketbook."

## Westinghouse Produces Over 7 Million 'Freon'-Filled Insecticide Bombs

MANSFIELD, Ohio—Since the start of the war to March 1, 1944, the Westinghouse Electric & Mfg. Co. had supplied Uncle Sam's armed forces with more than 7 million insecticide "bombs"—enough to rid a billion Army pup tents of all disease-carrying insects—J. H. Ashbaugh, manager of the company's Electric Appliance Division reported recently.

Thousands of these metal dispensers—each about the size of an ordinary household tin can—are being shipped daily to America's fighting men in the Southwest Pacific and other tropical areas to eradicate mosquitoes, flies and other insects that spread disease. Harmless to humans, the fine mist discharged from the dispensers exterminates insects in tents, barracks, tanks, airplane cabins and even fox holes, he explained.

So potent is the insecticide—called aerosol—that 7 million "bug bombs" could kill the insects in every house in North and South America.

A war-born invention—the insecticide developed by the Department of Agriculture and the throw-away container by Westinghouse in collaboration with the office of the Surgeon General of the Army—the device probably will be used after the war

to kill insects in farm buildings and homes.

In use today on the fighting fronts, the bombs contain a mixture of pyrethrum, sesame oil and "Freon." The right combination of pyrethrum and sesame oil creates the insecticide that is deadly to insects: "Freon," refrigerant gas that creates the "cold" in refrigerators, provides the pressure to expel the insecticide and carry it suspended in mid-air.

When a soldier wants to rid his tent of mosquitoes, flies and lice, he unscrews a cap attached to a needle-size tube extending down into the bomb and points the outrushing spray in various directions. In about three seconds, after enough insecticide is omitted to kill all insects in a pup tent, the soldier shuts off the spray by replacing the cap.

One dispenser contains a pound of insecticide, sufficient for 12 to 14 minutes of spraying—enough to "debug" 150,000 cubic feet of space, or the equivalent of 240 pup tents or 50 giant bombers. The lightweight steel containers are thrown away when empty, making it unnecessary to carry cumbersome spraying equipment.



## HEALTHFUL LIVING THROUGH FROZEN FOODS

### Ask Your Farmer Friends!

A "locker plant" for food freezing and frozen storage **RIGHT ON THE FARM** is the post-war dream of every modern farm family.

Tomorrow's farmer will KNOW about the advanced features of the BEN-HUR FARM LOCKER PLANT. Today's advertising will guarantee this ready market for you—for your volume selling at V-Day. Get your name on the list for "ground-floor" data and sales opportunities on the new BEN-HUR LOCKER PLANT.

**TODAY-OUR FIGHTING MEN NEED MORE WAR BONDS**

**Remember**

**BEN-HUR**

**FARM LOCKER PLANTS**

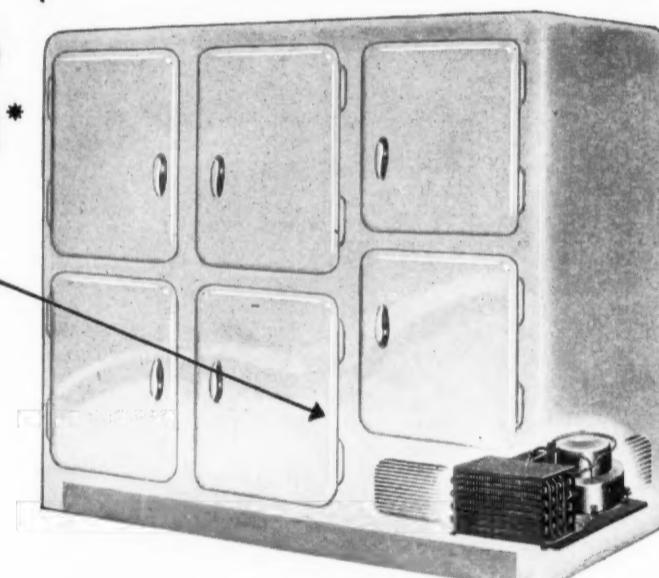
**BEN-HUR MFG. CO.**



**ARMY-Navy 'E'**  
Awarded Ben-Hur  
for outstanding  
achievement in  
War Production.

## Universal Cooler Post-War Hermetics are...

### All Purpose Engineered\*



### ...for more simplified, efficient adaption to your requirements

The success record of your post-war refrigeration product will depend heavily, as always, on the "power plant" inside. Universal Cooler's new line of field-tested hermetic refrigerating units—low, compact advance design and all-purpose engineered\*—are built to meet a wide range of applications with new standards of trouble-free performance.

#### Let's Ask Universal Cooler

Universal Cooler's design, research and test facilities are at your disposal for product development now. Write for the illustrated book "Refrigeration Is Our Business!"

**UNIVERSAL**



**COOLER**

UNIVERSAL COOLER CORPORATION • Automatic Refrigeration since 1922  
MARION, OHIO • BRANTFORD, ONTARIO



# KELVINATOR SERVICE TRAINING SCHOOLS NOW IN SESSION!



## Refrigerator Training Given New Men—New "Users' Guides" Available—to Meet Summer's Service Needs

This third summer of war will bring the heaviest demand yet for appliance service. In cooperation with the National Appliance Conservation Program, Kelvinator has inaugurated a two-phase program to train needed service manpower, and to enlist customer cooperation when service delays are unavoidable.

Today service representatives of Kelvinator distributors and zones are conducting Service Training Schools throughout the country. New men are being trained and experienced men brought "up to date" with the highly practical, simplified Kelvinator training course.

### Practical Service Clinic is Part of Every School!

Kelvinator's training schools teach two phases of servicing. One is the training in refrigeration fundamentals—the other is a service clinic. In the clinic, servicing techniques are thoroughly demonstrated, using actual refrigerators.

### Training Material Recognized As Finest Available!

The Kelvinator simplified training course was first offered last year. Called the most valuable service help of 1943 by retailers, it was widely used by prominent utilities, technical schools and dealers. It's factual—it's practical—it's easy to understand. And a complete file of bulletins give in detail the specific instructions in servicing Kelvinator refrigerators and electric ranges. In addition, there is a "Trouble Shooter's Guide" which is most valuable for



● Typical Kelvinator Training School  
Covering fundamentals of refrigeration, using training course, slide film and actual service parts.

use as a ready reference concerning the more common service difficulties.

### Kelvinator Training Schools Held in Every District!

Kelvinator Service Training Schools are being held in most key points throughout the country.

For information as to the dates in your locality, contact your local Kelvinator distributor or zone. If no school is scheduled convenient for your men, they will be more than willing to form a school wherever attendance warrants it. It is Kelvinator's sincere purpose to help every dealer and service organization solve the manpower shortage and servicing problem.

### New "Users' Guides" Made Available!

In an effort to conserve the valuable time of service men, Kelvinator has prepared two new "Users' Guides," one cover-



● Typical Kelvinator Service Clinic  
Where servicing techniques are thoroughly demonstrated, using actual refrigerator.

ing electric refrigerators and the other electric ranges. Each tells how to keep the respective appliances operating efficiently—how the user can diagnose minor troubles and make adjustments at home until a trained serviceman is available.



● Complete Kelvinator Material  
for Every Service Need!

Kelvinator's "Simplified Training Course for Refrigerator Men," the "Trouble Shooter's Guide," and the new "Users' Guides" covering both refrigerators and electric ranges, meet every serviceman's need. See your local Kelvinator distributor or zone for complete information.



The men and women of the Propeller Division of Nash-Kelvinator Corporation have been awarded, and proudly fly and wear, the famous Army-Navy "E" for High Achievement in War Production.

**Look Ahead with Kelvinator**

DIVISION OF NASH-KELVINATOR CORPORATION  
Kenosha • Milwaukee • DETROIT • Grand Rapids • Lansing

## Training Committee Gives Survey Results To Manpower Officials

(Concluded from Page 1, Column 2) why they couldn't be recruited immediately for refrigeration repair training.

"In fact, we look with favor upon veterans getting into work such as the refrigeration maintenance and repair field, since it offers such a promising future," the USES representative declared.

### Repairmen Become 'Vanishing Race'

In presenting its case for future deferments of experienced men the Committee called attention to the recent survey just completed on the status of servicing facilities, and pointed out such cases as that of Santa Fe, N. Mex., where a public utility company representative made the following report:

"Ten experienced servicemen employed in normal times. Two remain, both under 26. Considerable food spoilage caused by lack of prompt service at Los Almos war plant and Burns general hospital."

The following is the text of the report submitted to government manpower officials:

"It is a matter of record that on the average, domestic mechanical refrigerators require one essential service call per four years, in order

to keep them in operation, and that for the average commercial or industrial installation, one call per two years is required. There are some 20 million domestic refrigerators in service and about 3 million commercial and industrial units. Failing to receive these essential calls, plain arithmetic shows that some 5 million domestic refrigerators will cease to function during the coming year, and that one-half of the commercial and industrial units will go out of service.

"What would happen if such a thing as the stoppage of this quantity of refrigerating units were actually to take place? In the first place, many war plants would cease to function or at least would go back to the production of an inferior product and would be required to employ additional labor. Secondly, there would be a food shortage which would make present rationing quantities seem generous by comparison. Thirdly, blood banks, serum stores, and other medical supplies would suffer. Fourthly, food spoilage and contamination, both in the home and in the channels of distribution would bring about cases of malnutrition and food poisoning of epidemic proportions.

"In former years, when new equipment was readily available and before the war effort made its demands for additional refrigerating equipment, over 20 thousand refrigeration repairmen stood between us and the eventuality which has just been pic-

tured. Today that number has been reduced to about 6 thousand, and those remaining repairmen are the last line of defense.

"An authoritative and nation-wide survey, conducted during the current month by the National Refrigeration Service Council, reveals that today mechanical refrigerator repairmen are working an average of 56 hours per week, but despite these long hours, are unable to keep abreast of essential maintenance work. During the heat of summer, breakdowns will occur at about twice the present rate, but there will be no additional repairmen available to take care of them.

#### A CATASTROPHE IS POSSIBLE

"It is also to be noted that at the present time, when repairs are not made promptly, food spoilage can be retarded by outside low temperatures. This will not be the case in the summer. If plans at present being considered are carried out, there will be many less repairmen when summer arrives, and how nearly we approach a national catastrophe depends upon how many less that number turns out to be. And lest the impression be given that it requires a reduction in the present number of repairmen to bring about such a condition, may we say that the conditions referred to will occur in serious measure, even if every repairman now available is retained at his occupation.

"Last summer there were cases of food spoilage resulting in illness and actual deaths, and the situation appeared so critical that General Hershey was prevailed upon to send a telegram to State Selective Service

Headquarters, urging the protection of the refrigerator repair industry during the period of summer heat. No one has questioned the advisability of that action.

"Since last summer nothing has happened to decrease the need for refrigeration. On the contrary, there have been additional war plant installations put into operation which require service, and all of the other equipment in service is now one year older and, therefore, more likely to break down than heretofore. Coupled with that, the number of repairmen has decreased at an alarming rate since last summer and is decreasing even more rapidly at the present time.

"In line with every other essential industry, the refrigerator repair industry realizes that it must train new personnel in order to permit the separation of trained workers and in order to meet the increased demands placed upon it as an industry by the war effort. As a result and with government help and cooperation, a training program has been established in the refrigerator repair industry, which has been acknowledged as a leader of its kind and which will, when completed, go far to solve the present shortage.

#### TRAINING HAS JUST BEGUN

"But, and this point cannot be forgotten, this program did not become operative until the beginning of the current year, and over two years are required to train a repairman. Next year and year after that, these trainees will begin to carry some of the load. This year, however, they are still only trainees and nearly the entire training program is still ahead of them.

"Furthermore, and of equal importance, the entire success of the training program depends upon the availability of qualified instructors, who are themselves the same men who are now rendering the daily maintenance and repair service.

"Refrigerator repairmen have long since ceased to be protectors of our comfort or a service to our convenience, but are now essential to our actual existence and to the prosecution of the war effort. As such, and because of the few who remain, in proportion to the size of the job which they must do, they are in need of the utmost protection which can be given to them under Selective Service classifications.

"In summation, we wish to point out that there were formerly over 20 thousand qualified repairmen in the industry. Of these only some 6 thousand are left. Of this remaining number, approximately 50% are under 38 years and, therefore, subject to the draft. About 10% are under 26.

"The case of those repairmen under 26 years of age is no doubt the most difficult to handle, but in connection with this group and in addition to their general essentiality, we must point out that in many territories the only remaining repairmen are individuals in this low-age group, and unless they are so classified as to permit their deferment when they are so situated, the coming summer will find those particular territories with no repair or service facilities whatsoever, and with no hope of getting any.

#### NUMBER IS NEGIGIBLE

"In such territories, the possibility of one domestic refrigerator out of four and of one commercial or industrial installation out of two remaining out of service will actually be realized. Out of a total of the 600 repairmen who are in the age group under 26, about 200 are the sole source of service in their respective communities. The number involved, therefore, is almost negligible so far as the effect on any other phase of the war effort is concerned.

"Because of the conditions above described, it is essential that qualified mechanical refrigerator repairmen not only be retained on the critical occupation list, but furthermore, that due to the special effort now being made to induct young men, a procedure be established so that in those areas where only repairmen of under 26 remain as the sole source of service, they too be made subject to deferment.

"All of the statements made in connection with this report are the result of careful and extensive analysis and can readily be substantiated.

"Respectfully submitted:  
"National Refrigeration Service Council."

Col. Lenk President  
Of Lenk Mfg. Co.



D. ALLEN LENK

NEWTON LOWER FALLS, Mass.—Col. D. Allen Lenk, for the past 25 years treasurer of Lenk Mfg. Co., producer of leak detectors and soldering equipment, has been elected president and treasurer to succeed Maxwell Edelman, who died.

The appointment of M. A. Silverman as director of sales and H. H. Sherman as works manager has been approved by the board of directors.

## NIAGARA

### "NO-FROST" METHOD WITH SPRAY COOLERS

... gives always full capacity because there is no interruption for defrosting at sub-zero temperatures; protects quality in foods.

NIAGARA BLOWER COMPANY  
25 Years of Service in Air Engineering  
Dept. AC, 6 E. 48th St., New York 17, N. Y.



GOOD NEWS!...  
but will you be  
ready for it?

Don't let war's end catch you napping! Get set for the huge post-war market with a distributor franchise to sell Sherer's A to Z Commercial Refrigerator line.

Juicy steaks, garden-fresh vegetables, fish, fruit and wild game will be frozen in Sherer Freezers by thousands of Americans on farms, in stores and rural homes the country over. These freezers, and display refrigerator cases of all kinds, will be available when restrictions are removed—reach-in refrigerators, walk-in cooling rooms, Vegetaires, and other commercial refrigeration products, as well as the Sherer Distributor franchise are available now! Sherer—a pioneer manufacturer of fine commercial refrigerators, today serving our country with all types of refrigerators for the armed forces and essential civilian requirements, offers you a franchise on its complete line. Write or wire for details!



## No "FRESH" Valves from ALCO

They are "aged" to insure perfect performance



One of a series of actual photographs taken in the Alco plant.

### This is an aging oven—

where, for weeks, excessive pressure is exerted  
by the charge in Alco Thermo Valves

A "fresh" thermostatic expansion valve would be an insufficiently tested valve that might break down in service. But after enduring a minimum of four to six weeks in the Alco aging oven (partly shown above), giving the refrigerant charge every opportunity to escape from capillary tube, remote bulb, or diaphragm, more than 99% of all potential break-downs are discovered.

Charged at 31.2°F., where the pressure of Freon-12, for instance, is 31 lbs., the whole assembly is subjected to a constant pressure of 168.4 lbs. in the 125°F. temperature of the oven.

Carefully weighed before and after aging, any loss of weight is sufficient cause for rejection of the assembly—another of the series of tests to assure excellency of Alco Valves.



Designers and Manufacturers of  
Thermostatic Expansion Valves  
Pressure Regulating Valves  
Solenoid Valves  
Float Valves



ALCO VALVE COMPANY—853 Kingsland Avenue, St. Louis, Missouri

# ANOTHER WARTIME SERVICE . . .

## that is helping Frigidaire Dealers build for the future in the Home Freezer field!

Highlights of a comprehensive 4-point program that will enable Frigidaire Dealers to get a big share of this important volume.

### 1 Continuous extensive research . . .



A thorough study of the Home Freezer Business is going on continuously at Frigidaire to help both the Frigidaire dealer and user now and in the future. It covers such subjects as methods of preparing foods for freezing; proper packaging materials and techniques, the effect of different temperatures upon appearance, taste and food values, food-buying habits, product design, anticipated future purchases, etc.

### 3 Two new books for Home Freezer users



**How to Freeze and Store Foods**, a 28-page booklet that gives authoritative information on proper preparation, packaging, freezing, storing and cooking of frozen foods.

**Home Freezer Inventory Record** provides an easy way to keep up-to-date inventory of everything stored, including its description, weight, or size, quantity, date and where stored and removal record.

### FOOD FIGHTS FOR FREEDOM!

Grow more in '44 on the Farm or in your Victory Garden.

### 2 New frozen food packaging kit . . .



To assist Home Freezer users in getting proper packaging materials to insure best results and to help the Frigidaire Dealer identify himself with the Home Freezer business in his community, Frigidaire is making available this new Frozen Food Packaging Kit. It contains a complete assortment of moisture-vaporproof packaging materials, including pint and quart cellophane-lined boxes, cellophane bags, roll cellophane, stockinette, detailed instructions and an Inventory Record Book.

### 4 Helpful book offered in advertising . . .



The booklet "How to Freeze and Store Foods" is offered in Frigidaire's 1944 advertising. Through this advertising, in a long list of magazines, millions of people in cities, small towns and on farms are being told, how Frigidaire Home Freezers are helping to conserve food in thousands of homes.



**FRIGIDAIRE**  
Division of  
**GENERAL MOTORS**  
Peace-time builders of

**ELECTRIC REFRIGERATORS • RANGES • WATER HEATERS**  
**HOME FREEZERS • ICE CREAM CABINETS**  
**COMMERCIAL REFRIGERATION • AIR CONDITIONERS**  
**BEVERAGE, MILK, AND WATER COOLERS**

*Listen to GENERAL MOTORS SYMPHONY OF THE AIR . . .*  
Every Sunday Afternoon, NBC Network

# Experience Puts Question Mark on Some Pay Now For Postwar Priority' Plans

## Idea Has Some Good Points But Dealer Must Be Sure of Its Value

BIRMINGHAM, Ala.—Before a dealer puts into effect a priority plan for the purchase of electrical appliances for after-the-war delivery a number of points need to be considered, according to the experience of several Southern stores which have tried it.

In the first place a registration plan whereby the customer is not required to pay down anything is probably not worth very much, may be no more than a list of names taken at random out of the telephone book. Yet if a down payment is to be taken that also involves a lot of "ifs and ands."

As far as the simple registration plan is concerned the question arises "Why fool with it?" Dealers will have all the prospects they can supply for quite a period after the war on account of the inability of manufacturers to supply the demand. Any such list taken now is bound to be subject to many changes before appliances are ready to deliver to the registrants.

In the registration plan, the matter of prices, models and styles enters in. It can not be determined in advance just what the customer wants. The latter doesn't know. Therefore the dealer cannot pass this informa-

tion along to the manufacturer and place his order accordingly.

One dealer explained that the registration plan had the immediate value to him of advertising his store as an appliance market place in the minds of his customers. He doesn't now have any appliances at all to sell but he doesn't want to lose his identity completely in this field.

### WHERE CONFUSION ENTERS

Yet another dealer who advertised the registration plan extensively found that it created confusion in the mind of customers.

Some rushed in thinking they could get in line for immediate delivery of appliances. This happened, although the advertisement explained that this was an after-the-war proposition. If it is a department store advertising the plan then the customer should be carefully directed to the right department to register. Otherwise more confusion will result.

One dealer said he thought he would need the registration list as a protection to himself after the war. In other words he won't be able to supply all his customers as soon as they would like to buy. He can explain that he is making deliveries in

the order names come on his priority list. But another dealer, who has not undertaken such a plan, said he would much rather be in position to say "first come, first served."

If a priority purchase plan is to be offered it needs to be worked out to the last detail and to that end it seems the best one offered in the South is that of the Birmingham Gas Co. This company accepts monthly deposits from customers along with their gas bills. This money is invested in war bonds and held to the customer's credit.

### HOW BOND PLAN WORKS

Thus if a customer says she wants to buy a refrigerator, it is figured roughly at \$250, and the customer starts paying on it, any amount she desires per month. This money is invested in multiples of \$18.75 in Series "E" war bonds. The customer gets the interest on the war bonds, and at any time can ask for a refund of her money or the delivery of the war bonds. In other words, if conditions change and the customer decides she doesn't want the refrigerator it is all right with the firm.

The company pays its salesman a half commission on each sale, the other half to be paid when the appliance is delivered to the customer. Refrigerators and ranges are the appliances chiefly bought under this plan, although it applies to house and water heating equipment as well.

# Study Shows Electric Range Can Be Greatest Helper To Farm Housewife

URBANA, Ill.—Electric ranges have a place in the farmer's picture of postwar electrification, according to Margaret Davidson, Home Economics Director of Hotpoint, in her talk on "Improved Cooking" before the Rural Electrification Conference at the University of Illinois.

"There will be new appliances and there will be new improvements of old ones after the war," says Miss Davidson. "But these changes will come after they have been time-tested and their true worth has been established.

"An average of five pre-war surveys on the farm woman's work week gives about 64 hours a week as the average. In some cases where there were no children the work week came down to 59 hours—but in others where there were youngsters in the family, the average time spent by farmers' wives was 77 hours a week! In addition to the usual homemaking, a farm woman spends extra time gardening, taking care of poultry flocks and other extra-curricular duties. A farm woman can look scornfully at those who complain at working 48 hours a week."

### COOKING ACCOUNTS FOR 30%

"As far as I know, no wartime surveys of this type have been made, but if they have they probably would show even longer hours for the farm women—because of difficulty getting help on the farm. One survey made by the U.S.D.A. gave the time spent in preparing meals as 30% of the time spent in housekeeping or about 835 hours a year. This is quite understandable because the farm woman prepares over a thousand meals a year—and they are big hearty meals at that!"

"It has been estimated that women who use coal and wood ranges spend over 150 hours or almost 20 8-hour working days a year kindling fires, carrying fuel, taking out ashes and cleaning stoves. In contrast, women who use electric ranges can keep them spotless in less than half an hour a week."

"The electric range is automatic. Time controls can be used to turn the oven on and off in the absence of the cook. Food can be placed in the oven in the early morning, the controls set and the farm woman is free to go about her many duties

with the assurance that at mealtime, food will be ready to serve."

"One report estimates that an electric range in one year's time saves over 600 man hours of labor, compared to the type of ranges usually used on farms."

### MAKES FARM DESIRABLE

"One thing the war has taught women of all groups has been a new value of time. As new duties have been shouldered with a grin-and-bear-it attitude, eyes have been focused on the after-war days when the load will ease. Certainly the farm woman is entitled to all the automatic convenience and labor-saving appliances she can have—and for drudgery release balanced by new satisfactions, the electric range ranks high. There is a plus value in living that only time can provide. With more time for living—less for working—farms will no longer be considered a place to move away from as soon as possible."

"While electric range manufacturers have not been making ranges for civilians during the war, Hotpoint has been turning out cooking equipment for the Army and Navy. The navy that has a very high standard of food has used electric ranges in 90% of the combat boats and all the submarines that have gone down the ways since the war started."

"When the boys and girls come back from service with Uncle Sam they will have been accustomed to well-cooked foods—the kind cooked on electric ranges. That is a challenge to the farm homes who have supplied so many of our war heroes."

### Zinc Use Permitted In Ranges, Stokers

WASHINGTON, D. C.—Domestic electric ranges and coal stokers are included in the new list of products in which zinc may be used, according to an amendment to Conservation Order M-11-b, issued recently by the War Production Board.

This action, explains WPB, is in line with the general policy of the board to permit the use of scarce materials if the result is to conserve material in greater demand, effect a saving in man-hours, or enable the manufacture of a better product.

**TODAY**

Philco war research is creating new knowledge and skill for the finer Philco products of tomorrow... in radio, phonographs, television, refrigeration and air conditioning.



**TOMORROW**

Philco leadership in engineering, merchandising and promotion will bring new joys to the homes of America... and new opportunities for profit to Philco dealers everywhere!



**PHILCO**  
CORPORATION  
BACK THE ATTACK—BUY WAR BONDS

Tune in the RADIO HALL OF FAME, Sundays, 6 to 7 P. M., EWT., Blue Network. The Top Hits of the Show, World, each week.

**HAVE YOU RECEIVED  
YOUR  
COPY?**



**PENN'S New Condensed Catalog** is conveniently indexed and gives quick information about Penn refrigeration controls and replacement parts. You'll find it an easy-to-use guide to dependable refrigeration controls for commercial applications. If you have not received your copy, a postcard request will bring one to you quickly.

**PENN ELECTRIC SWITCH CO., Goshen, Indiana**

Export Division, 13 E. 40th St., New York 16, U. S. A. In Canada, Powerlite Devices, Ltd., Toronto, Ontario

# Climate...enemy or friend



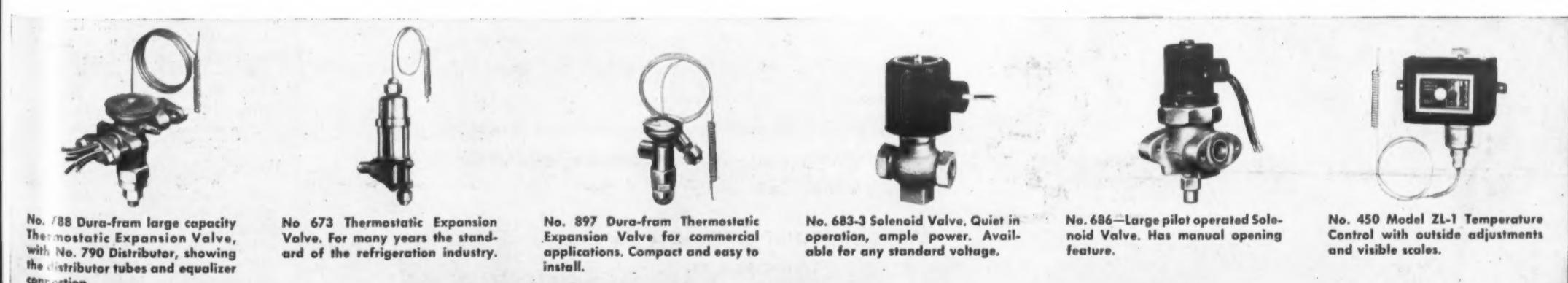
## "DL" Products Help Make The Difference

Climate is a friend if it helps us, or hinders the enemy. Climate is an enemy if the reverse is true. It has been a factor in every war—an exceptionally powerful factor in this war. Almost every extreme and rigor is encountered in worldwide operations, affecting every military element from troop movement to photo reconnaissance.

"DL" Refrigeration Controls and "Detroit" Expansion Valves help preserve food supply, and furnish cool conditioned air in the hot, steamy jungle of the South Pacific, on the seven

seas, in fact, wherever the United Nations are fighting. Other "DL" controls regulate temperature of chemicals in photo processes, refrigerate a variety of biological products—do many tasks to help give our fighting forces the edge.

"DL" products have been the leaders in the refrigeration field for many years. If your present production or postwar planning calls for expansion valves, solenoid valves, or controls; specify "DL" for complete satisfaction.



## DETROIT LUBRICATOR COMPANY



General Offices: DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators.

# 'The Velocity of Business In the Postwar Era Will Depend Upon the Salesman'

## Jones Calls For More Attention To Training, Sees Great Opportunities For Veterans

By George S. Jones, Jr.

Vice President and General Sales Manager, Servel, Inc., Evansville, Ind.

As Told to Gerald Eldridge Stedman

The critical importance of the salesman in postwar economics is being almost wholly ignored. Many forces are surveying, planning, designing . . . markets, new products, permanence of factory employment, reconversion. But practically nowhere is attention being given properly to the provision of salesmanship. Yet our entire postwar economy can be injured disastrously without it. Because there can be no adequate and profitable distribution without salesmanship.

War production requires no salesmanship. Industry now produces for one customer who has ample funds,

desirous of getting as much production as possible in the shortest space of time.

Demand has been so great that more than 60,000,000 workers are now gainfully employed, almost double normal peacetime employment. About 20,000,000 of these are women, and in an Evansville survey among 3,581 women, it was found that 73% of women hoped and intended to remain in factory employment. These can remain at permanent peacetime work only if there is demand for peacetime products, the equivalent of war production.

Then, there will be 135,000,000 cus-

tomers of uncertain buying powers and intricately variable moods and whims. There will no longer be just one customer, eagerly absorbing all that can be produced and placing immense orders that assure the most efficient mass production.

In peacetime the only force that can cope with the complexity of millions of prospective customers, reducing these variable whims into a simple collection of purchases of such size as to sustain mass production at the level that will assure permanency of present factory employment, is the salesman.

### Salesmen Can 'Save the Peace'

If a proper army of salesmen is not enlisted, trained and inspired to accomplish this, we will most certainly lose the peace.

There are certain types of products that are "impulse items" for which advertising creates demand that responds voluntarily. Customers go into a store and purchase of their

own accord. Our economy cannot be sustained alone by the purchase of such impulse items.

Durable products that are hard to sell because they represent careful buying decisions and considerable capital outlay are the basic barometers of our industrial progress. Actual purchase of these can seldom be motivated by advertising alone.

Advertising is the indispensable educational element that creates understanding and preferred recognition for durable products while it actually can create dynamic, voluntary demand for impulse items.

There is a vital distinction in its consideration and use for these two types of goods. It cannot create voluntary demand for durables to the extent required to assure mass production. It creates for them a favorable state of mind, an acceptance and tendency towards mental purchase which only the persuasion of the salesman can actuate into purchase.

### Guardian of Advertising

The salesman becomes, therefore, the guardian of the advertising investment for durable goods. Without him, it would be considered largely an expense because for every purchaser that advertising itself impels, it creates a mental property and favorable disposition in the minds of nine other prospects who will do nothing about the purchase unless activated by the persuasion of the salesman.

This consideration of the salesman becomes critically important when one analyzes the results of some of the recent postwar market surveys. In its sounding out, "Fortune Magazine" recently announced it had found pent-up wants estimated as \$28,000,000,000; the first five choices being automobiles, 21%; new house, 13.3%; mechanical refrigerator, 8.6%; house repair, 5.3%, and washing machines, 5.1%.

Agreeing quite closely with this, the U. S. Chamber of Commerce has announced its third postwar market survey showing a public wish for durable goods that aggregates more than \$20,000,000,000. Purchases found to be planned for the first six months after the war included homes, \$7,184,800,000; automobiles, \$3,307,500,000; household appliances, \$1,215,910,000; home furnishings, \$711,410,000; home and farm improvements, \$7,500,000,000.

All market surveys are inert, static conjectures until sales organizations turn them into fact. Useful in somewhat picturing possibilities they move no wheels and create no employment. They should energize management to recognize the vital importance of salesmanship.

Too often, however, it appears to feel that sales effort will just happen, or that it can be mustered quickly. It considers salesmanship as somewhat extraneous, or to be set apart for consideration at the last moment of postwar planning.

As Waddill Catchings points out, in his discussion of Economic Folklore, before the National Association of Cost Accountants, Boston, September, 1943: "We have had a productive genius for a long time—some three hundred years in fact. But we have never yet succeeded in maintaining full employment. We have the greatest productive machinery the world has ever seen, but the mechanism breaks down so often that we operate only on a part-time basis."

### Production Alone Not An Answer

This being so, there can not be too much reliance placed on a type of economic thinking that centers only upon production if we are to solve the problems of permanent employment and a higher living standard.

A locomotive may be accurately designed, built, placed on a track, fueled properly with steam up. But it will not run until the engineer levers it into gear. And until he does that it is not a locomotive in reality. Similarly, a market may reveal the most encouraging statistics of buying power, price range, income levels, literacy, magazine circulation, but until some salesman levers the possibility into fact, nothing happens.

The new economics must consider the distribution line as even more deserving of attention than the production line, since the latter could not long exist without it. And the new economics must consider the forces that gear to create active demand rather than merely to rely on static definitions of distribution. Without demand, our economic picture will collapse, employment cannot maintain, depression will eventually and money will lose its value. The velocity of business depends upon the salesman.

Someone has pertinently said that this is not so much the era of the "common man" as it is one in which man is acting awfully common. But Americans will never want to become so common as to live on G. I. standards in peacetime. Dispense with salesmanship, however, and that is exactly what will happen.

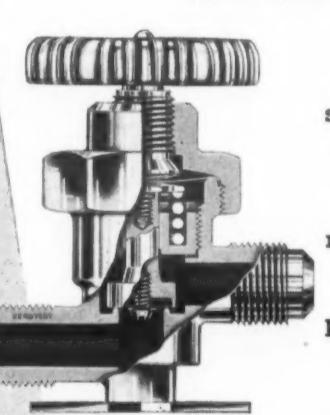
Distribution rather than production is the great problem to be solved, yet even it is not the final economic determinant. The reality of wealth culminates only in the use of the product. An idle automobile, refrigerator, house, or industrial plant is

(Concluded on Page 9, Column 1)

# KEROTEST

Progressively meeting the  
VALVE REQUIREMENTS of the Refrigeration and  
Air Conditioning Industry for over two decades . . .

KEROTEST  
valves and fittings  
... always  
a dependable  
specification  
for  
AIR CONDITIONING  
REFRIGERATION  
Equipment



As we bend every effort to supplying fine Kerotest Valves for vital war needs—in unprecedented quantities—our engineering research maintains a continual, close study of industry's changing valve requirements for post-war applications. You are assured that the KEROTEST name, which has signified the finest in refrigeration and air-conditioning valves throughout the industry, will mark even greater valve quality, positive control, dependability and performance in the years of peace to come.

KEROTEST MANUFACTURING COMPANY  
PITTSBURGH, PA.

Dependable  
KEROTEST  
Valves



## Veterans, Good Bets For Sales Ranks, Will Want Real Training

(Concluded from Page 8, Column 5)

not wealth. Until anything becomes useful, it is in the way and a deteriorating extravagance.

Use, alone, endows the characteristic of wealth. The parable of the talents in the Biblical book of Matthew, in which "he who had one talent, hid it in the ground so that from no use or exchange was any addition brought forth," is an age-old admonition that even money is not wealth until it becomes useful. So the distribution of any durable product may be of no avail whatever, unless it becomes adequately joined with a want in such manner as usefully to answer a need.

From this standpoint, the salesman is the custodian of wealth. He promotes the use of the product and thereby transforms distribution from a liability into an asset. We may buy all manner of impulse items from vending machines, but we shall never find a prospect purchasing an automobile by placing a thousand dollars in a coin slot. It takes salesmanship to arouse that purchasing decision.

### Purchasing Power Important Only When 'In Motion'

The differentiation between purchasing power and wanting power, or willingness to buy, must again be stressed. Savings deposits, bonds, hoarded money turn no wheels of industry. They are static, valueless considerations until stirred into velocity by an activated desire that transforms them into commodity use. And the greater the velocity, the greater the re-flow into wages and employment.

It isn't the gold in Kentucky hills that counts; it is not what that gold can buy that actually matters. It is how successfully the salesman persuades sufficient prospects into active commodity demand to cause all that juice to flow that counts.

Money is the nation's life blood, valuable only as the selling force pumps it in constant, rhythmic circulation through the creation of demand. The salesman is the catalyst that causes economics to function. He is truly the heart of prosperity. Without his activities, neither employment can endure nor can a higher living standard be developed.

Anything that creates buyer hesitancy is a hazard to winning the peace. Unquestionably, the day-dreaming of many imaginative industrial designers in creating an illusory hope of strange new inventions to come, has tended to sow the seeds of purchasing procrastination in the public mind.

Knowing, for example, that it has made the old car do for so long, it is apt to wait until these visionary designs turn real before buying. This can retard markets or cause buyers

to throw first purchasing interest elsewhere, damaging the distributive flow in those industries where emphasis upon revolutionary design has been advertising emphasized.

This naturally will limit use and therefore limit wealth in those industries unless the persuasion of salesmanship is applied to dispel such hesitations.

Peace will bring greater dependence upon the salesman than ever before in this country's history. He is the important essential in that development of economic momentum necessary in our postwar world. He is the most individual of enterprisers.

Winning reward in direct ratio and to the extent he performs, his orbit of service and earning capacity is bounded only by his initiative and energies. He has constant incentive and no limitations except those he

imposes upon himself.

Because of this, salesmanship should be the most fascinating of peacetime professions, one more worthy than ever of lifetime pursuit. There is no other profession which requires the variety of understanding, skill and ingenuity; nor one in which the chance to gain is more healthy.

### Where the Veteran Fits In

It is to be expected, therefore, that the profession of salesmanship will offer returning soldiers an unusual occupational opportunity. They will be sympathetic to sales training, because army experience has taught the need and habit of training for any pursuit.

Sales training has been the most neglected economic consideration. One of the most exacting professions, since it deals with all the variables of human behaviorism and all the arts of persuasion, yet salesmen have been turned out to perform on their own in an untrained manner.

Soldiers have been through the

greatest training schools the world has known; more intense, resultful and complete. They know its value to their lives and to their performances. They not only will be sympathetic to sales training in their peacetime pursuits—they will demand it. And they will be entirely critical of all inadequate sales training plans.

No longer can business send them out with a lie and promise, a poorly constructed presentation, a list of dubious prospects. No longer will they react to the vaporized bombastics of some incapable supervisor. They will want real training, resultful training, thorough training.

Salesmanship will provide the adventure, the outlet for energies, the challenge that will most content them after the excitement of war. The appreciation of the public for their war performances will provide favorable contact. And in this profession they can most quickly make up the lost progress in attaining their civilian goals in life.

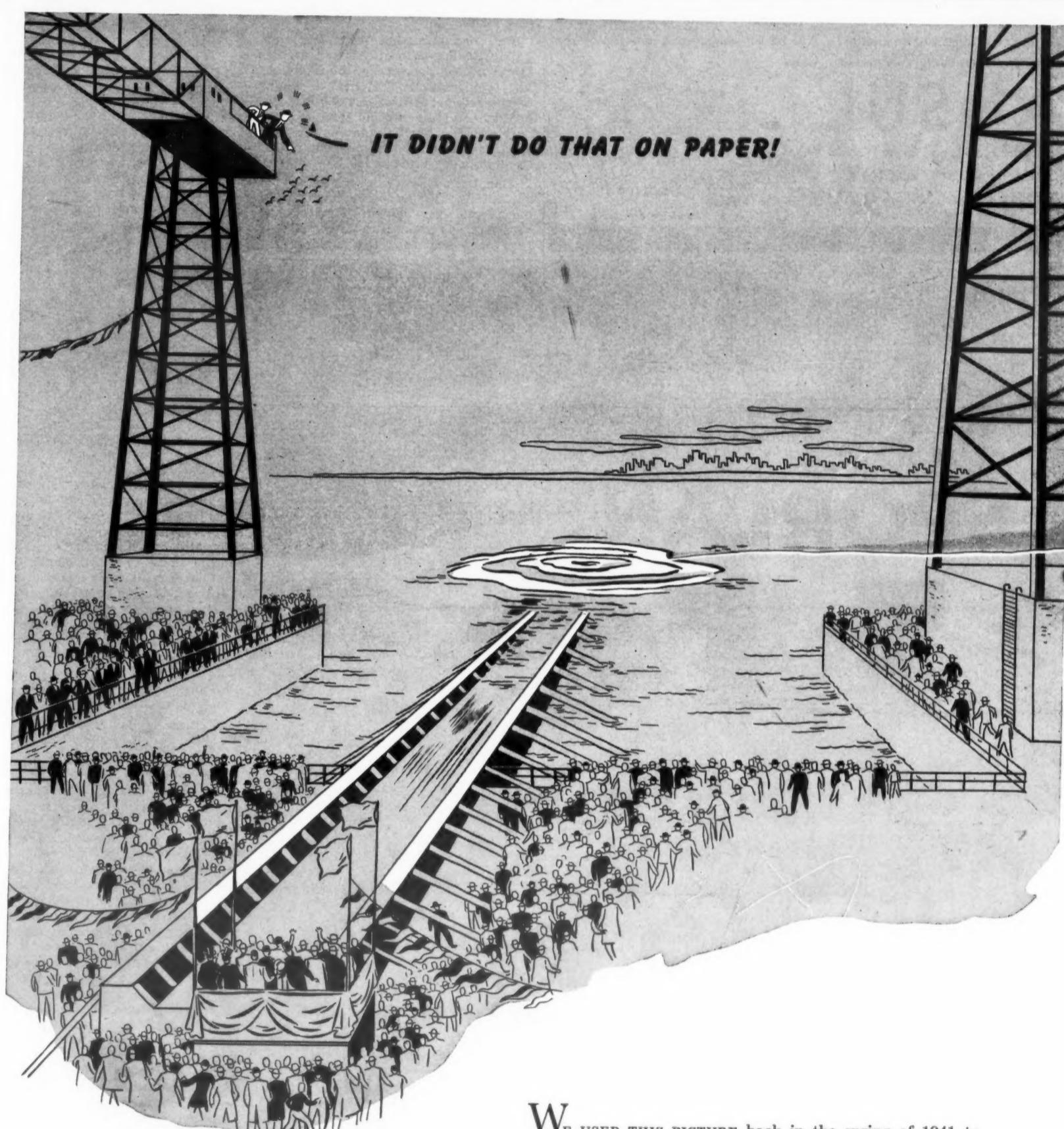
From all of this, I feel that the manufacturer who is planning best

for peacetime progress is one who visions the need of assuring that he will have a sales organization in objective distributing activity almost the equivalent of permanent factory employment maintained, in that it takes about one salesman to create purchases for what one factory worker can produce. And I feel that it is none too early to work on thorough-going sales training plans for selling must be considered a trained art in the peacetime ahead.

### Propeller Fan Group Elects New Officers

NEW YORK CITY—E. C. Englert was elected president of the Propeller Fan Manufacturers Assn. at the annual meeting held recently at the Pennsylvania hotel here. Wallace Allen was named vice president, and V. C. Shetler was chosen as secretary-treasurer.

Another meeting of the entire association is scheduled for April 11 at the Hotel Statler in Detroit.



WE USED THIS PICTURE back in the spring of 1941 to illustrate a point about electrical appliances that is now being emphasized by many industry leaders in their discussions of post-war merchandise.

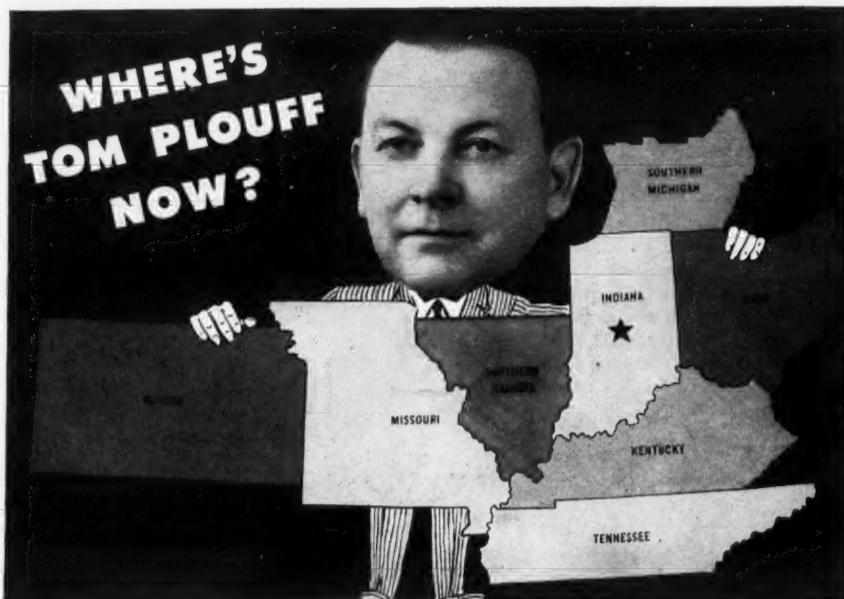
"The real test of any appliance," we said, "lies in successful performance in its natural element—the home."

The Bendix Automatic Home Laundry had met this test in more than 300,000 homes before the factory converted to war work.

And we think that is a pretty important fact to remember, because it's a foregone conclusion that the post-war demand will be for automatic "washers"—with the Bendix principle the only one proved by years of successful service outside the laboratory.

**BENDIX HOME APPLIANCES, Inc.**  
SOUTH BEND, INDIANA

*The People who Pioneered and Perfected the Automatic "Washer"*



If you're wondering where your friend, Tom Plouff, can be reached today, listen to this...

From now on, Ansul Representative Tom Plouff will be located at Indianapolis, Indiana, where he will be giving excellent Ansul service to the refrigeration industry in his new home state as well as Missouri, Kansas, Ohio, Kentucky, Tennessee, Southern Michigan and Southern Illinois.

If you're in his territory, Tom Plouff will be very happy to serve you at any time.

AC-644

**ANSUL**  
CHEMICAL COMPANY  
Agents for Kinetic's "FREON-12"  
MARINETTE • WISCONSIN



Orders Filled  
the Day  
Received

\*REG. U. S. PAT. OFF.

TWENTY-NINE YEARS OF KNOWING HOW



**S**porlan CONTROLLED PERFORMANCE valves are the only thermostatic expansion valves with elements charged according to the application of the valve. The **selective charges** are designed to give the best operating characteristics for each class of installation. Only by using SPORLAN valves can you be assured of PEAK Performance on EVERY installation.

Sporlan manufactures Solenoid Valves... Magnetic Pilot Controls... Modulating Pilot Controls... Refrigerant Distributors and the only Thermostatic Expansion Valves with **Selective Charges**.

For consultation on any refrigeration or air conditioning valve problem, get in touch with

**SPOEHRER-LANGE COMPANY**

3723 COMMONWEALTH AVENUE  
ST. LOUIS, MISSOURI



## Army Refrigeration Problems

By P. B. Reed

Manager, Refrigeration and Air Conditioning Division, Perfex Corp.

### Air Circulation For Air-Cooled Units

Kitchens are, as a rule rather hot, which is hardly surprising since they contain stoves and ovens for cooking food and frequently they are not very well ventilated. Army kitchens and ship's galleys are no exceptions; in fact, they are likely to be even hotter than average since they must handle large volumes of food for active men who burn up a lot of energy and require good solid food and plenty of it.

But in these hot kitchens and galleys, along with stoves and ovens, there is need for storage of foods at low temperatures. The heat leakage of the refrigerated cabinets is apt to be high and the service load is also quite high as the air that enters the refrigerator when it is opened (quite frequently too) is hot.

This type of service is similar to restaurant kitchen service which is considered one of the heaviest on refrigerated equipment. It is therefore necessary that the cabinets be

well insulated with a good grade of insulation, three inches or more in thickness, and that it be well sealed against moisture so that it will retain its insulating value.

#### HEAT FROM THE UNIT THROWN BACK INTO THE ROOM

The heat that is extracted from the refrigerated cabinets—walk-in coolers, wall boxes, ice-cream cabinets, etc., by the condensing unit is, in the case of the air-cooled unit, thrown right back into the room, for in most cases the refrigerated cabinet is the "self-contained" type, with the condensing unit in a compartment in the cabinet; or the condensing unit is placed adjacent to the cabinet.

#### CAPACITY OF UNIT GOES DOWN AS HEAD PRESSURE GOES UP

The refrigerating capacity of a condensing unit varies inversely with the discharge pressure, which is to say that if the discharge (or "head" or condensing) pressure rises, the refrigerating capacity falls; an increase in discharge pressure causes a decrease in the refrigerating capacity, and consequently the ability of the unit to extract the heat from the cabinet as rapidly. As a result the condensing unit must run a larger percentage of the time or in fact it may well be that the capacity of the condensing unit is so much lowered by the higher discharge pressures that even by running all the time, it still cannot remove the heat fast enough and so the temperatures rise in the cabinet.

#### GOOD AIR CIRCULATION NECESSARY

The air-cooled condensing unit is working under a disadvantage in being placed in the hot kitchen air, but if it has been properly chosen originally it can still do its work satisfactorily provided that it gets good air circulation so that the heat it throws off from the condenser will be rapidly carried away and the heated air displaced by other air that while perhaps not cool is comparatively so and is not hot.

#### CAUSES OF BAD AIR CIRCULATION

The air cooled condensing unit has a fan on it, the purpose of which is to move the air through the condenser and thus carry away the heat that came out of the refrigerator. If for any reason the air is not moved through and away from the condenser rapidly enough, the condenser heats up, the discharge pressure rises, the refrigerating capacity and effect goes down, and temperatures in the cabinet go up.

In addition to the common causes there are some unusual causes of insufficient air circulation through and away from the condenser, such as: undersize fan, wrong type fan, fan put on backwards, motor running too slowly or in the wrong direction, fan blades bent or flattened, fan improperly centered on the condenser, fan too far away from the condenser, shrouds bent, removed or improperly placed to correctly divert the air, wrong size, type or thickness of condenser, and perhaps other causes, but the most common cause of bad air circulation is a dirty condenser.

#### DIRTY CONDENSER

In the course of a month the fan moves thousands of cubic feet of air through the condenser and this air

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## Here's How to Avoid Recirculation of Air Around Condenser

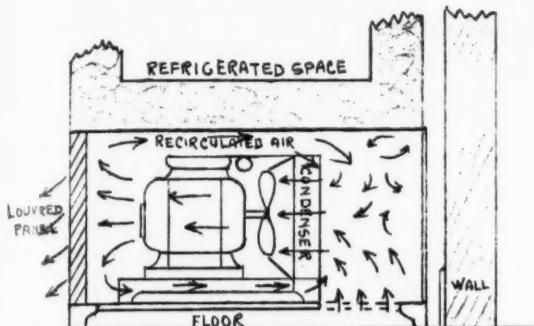
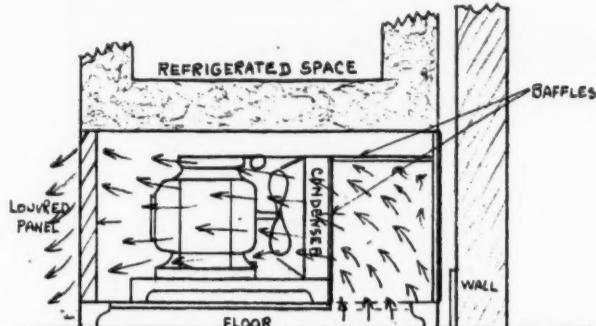


Fig. 1 (left) illustrates how air warmed by the condenser is recirculated over the condenser to cause excessive operation of the air-cooled refrigeration unit. Fig. 2 (right) shows that reducing the resistance offered by the louvered panel and installation of baffles prevents recirculation and gives the unit a chance to cycle normally.



### Air-Cooled Units Need Good Air Circulation

(Concluded from Page 10, Column 5) not refrigeration experts; they do not realize that they are causing any trouble, so the service engineer must watch for these conditions and explain to the user why they can not be permitted.

#### RECIRCULATION

Another cause of interference with the air flow is "re-circulation." If the air from the fan strikes a wall or a louver in a machine compartment, the air is deflected and in many unit compartments in "self-contained" fixtures, is pushed around to the other end of the compartment where it is picked up again by the fan and again passed through the condenser and re-heated.

A large percentage of the air in the compartment "recirculates," that is, goes around and around inside the compartment and does not have a chance to diffuse with the air in the room and lose its heat, and as a result it and the condenser get hotter and hotter, the condensing pressure goes abnormally high, the refrigerating effect goes way down, the refrigerator warms up and the cost of operation is excessive.

#### CORRECTING THE CONDITION

Figs. 1 and 2 show a typical case of recirculation and how it was corrected or at least relieved. The condensing unit was equipped with a suction fan and the intention was that the incoming air was to be drawn up from the floor, pass through the condenser and fan, over the motor and out the louvers in the front panel of the compartment. In this manner the refrigerator could be pushed clear back against the wall.

It was found, however, that the louvered panel offered so much resistance to the air getting out of the compartment that quite a lot of the air "bounced back" and found its way alongside the unit and condenser and finally got into the air-stream into the condenser and the hot air was thus "recirculated" through the

tend to recirculate from getting back into the air stream to the condenser.

Before these corrections were made the "Freon-12" condensing unit ran practically all of the time at a head pressure of 185 p.s.i. and the temperature in the refrigerator was between 50° and 60° F. Afterward the unit cycled freely with a head pressure of 124 p.s.i. and the inside temperature averaged 43°.

## Open House, Dinner & Meeting to Mark Opening of Thermal Des Moines Branch

DES MOINES, Iowa—To celebrate the formal opening of a new branch office at 907 Locust St. here, H. W. Small, president of Thermal Co., Inc., St. Paul, Minn. parts jobber, has arranged for an open house at the new office on Saturday afternoon from 2 to 5:30, April 15, to be followed by a dinner at Fort Des Moines hotel after which guests are invited to hear three talks on refrigeration topics.

W. H. Snyder, long associated with the refrigeration industry, has been appointed manager of the new branch. After his graduation from Purdue university in 1921, Mr. Snyder spent several years with public utilities. Later he became manager of the commercial refrigeration department at G-E Supply Corp.'s St. Paul office, and was with the Nash-Kelvinator branch in Minneapolis.

F. Y. Carter of Detroit Lubricator Co., P. B. Reed of Perfex Corp., and H. W. Small are scheduled as the

speakers for the 7:30 session planned to follow the dinner. Mr. Carter will discuss "Characteristics and Application of Thermostatic Expansion Valves," while Mr. Reed will talk on the "Practical Control and Design of Multiple Refrigeration Systems." The "Outlook for Commercial Refrigeration During the Next Twelve Months" will be described by Mr. Small.

All those interested are invited to attend the dinner as guests of the Thermal Co., but Mr. Small requests that the company be advised in advance so that reservations may be made.

### Los Angeles Gets New Firm

LOS ANGELES—Acme Refrigeration Co. is the firm name under which Leonard L. Young and Ralph H. Hanford have published an intention to conduct business at 129 South Vermont Ave., Los Angeles.

# To Distributors

who expect to build a profitable  
Future Business in Frozen Food Cabinets

As soon as permitted, Savage will produce a line of frozen food cabinets which will offer the distributor an excellent opportunity for profit. These cabinets will be the product of long experience in the manufacture of low temperature storage equipment.

Before the war, Savage Ice Cream Cabinets had achieved an outstanding record of success in their field. The same technical skill which was responsible for their success will build unusually high *value* and dependable *service* into the Savage Frozen Food Cabinets now waiting the word "Go." In addition, Savage cabinets will have the selling advantages of a good name, plus merchandising support.

#### Write for further information.

Agencies for the distribution of Savage Frozen Food Cabinets are now under consideration. For information, address

Dept. 5, Savage Arms Corporation  
Utica, N.Y.

SAVAGE ARMS CORPORATION, Dept. 5, UTICA, N.Y.  
I am interested in the future distribution of Savage Frozen Food Cabinets. I would like to investigate the prospects of a future relationship.

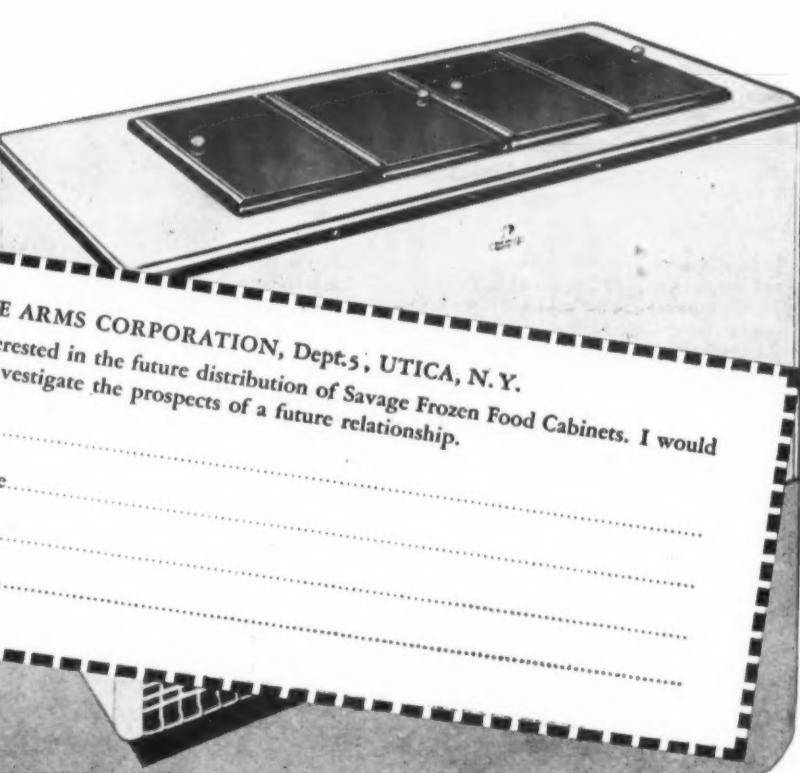
Name.....

Firm Name.....

Address.....



**SAVAGE**  
Frozen Food  
CABINETS



# Untapped Resources Hold Tremendous Future for America, Institute Told

## 1,000 Hear Eric Johnston & Utility Heads at Washington Institute Meeting

WASHINGTON, D. C.—Eric Johnston, president of the Chamber of Commerce of the United States, and mentioned as a possible candidacy for the U. S. Presidency, was the principal speaker before 1,000 representatives of the electrical industry and other business executives who attended the Tenth Annual Meeting of the Electric Institute of Washington, held here late last month.

Dr. William McClellan, chairman of the board, Union Electric Co. of Missouri, and one of those responsible for the inception of the Electric Institute, stressed the very special opportunity for the expression of individual initiative which is afforded executives of electric utilities.

He pointed out that utility companies, unlike other businesses, operate as a monopoly under special franchise from municipalities or other governmental units and also that the utility is performing a function for the community which that community could provide for itself. "Therefore," he said, "the utility is obligated to provide a service for the community which would be better and cheaper than the community could provide for itself; otherwise, the threat of municipal or public ownership would become a reality."

He stated that it was in this field of developing an improved service which would be superior to any service which might be provided by the community itself, in which everyone connected with the electric utility has a tremendous opportunity for the expression of individual initiative.

The same principles of the expression of individual initiative and the recognition of suggestions and ideas from every individual in any organization apply as well to all types of business, and the continuance of the opportunity for expressing this individual initiative is essential to continued progress toward the goal of higher standards of living in this country.

A. G. Neal, president of the Potomac Electric Power Co., stated:

"Since the electrical industry's first power house was built, the utility has been dependent upon other branches of the industry for light bulbs, appliances, and equipment through which it could render service to the public. The Potomac Electric Power Co. has always recognized a responsibility to its customers considerably beyond the end of its distribution system and has advised its customers as to the type of equipment which would best serve their needs,

as how best to make use of that equipment after it was installed.

"Participation of Pepco, therefore, with the balance of the industry, in the Electric Institute of Washington was a very logical development of the company's basic policy of rendering electric service to its customers."

"Prior to the organization of the institute, the company had a complete freedom of choice between aggressive, direct merchandising, a halfway position of power company merchandising with dealer help, or a non-merchandising operation with power company promotion directed through a cooperative industry organization. After months of studying the local market, it was determined that the institute should be organized and that the Potomac Electric Power Co. should discontinue its direct merchandising."

J. S. Bartlett, managing director of the Electric Institute, commenting on the results of cooperative effort, described the "shopping center where nothing was for sale," which was organized as a part of the institute's educational program for the public, and which consisted of 10,000 square feet of exhibit space where all types of electrical merchandise were on display. In describing the postwar plans of the institute, he stated that much of the cooperative effort of the industry in Washington would be pointed toward supporting the efforts of manufacturers and wholesalers in the training of retail salesmen,

## Gift of Appreciation Is Appreciated

Geo. F. Kindley, retiring president of the Electric Institute of Washington (D.C.), examines the gun presented by L. S. McCarthy, newly elected president, on behalf of the members and board of directors at the 10th annual meeting of the group.



through supplementing their "product" training by training of the salesmen in the utilization of the product and in assisting him in solving his problems with individual prospects at the customer level.

Mr. Johnston's presence at the meeting was particularly significant, not only because he is the most prominent and active spokesman in wartime Washington for American business men, but also because he is the head of three large electric sales and manufacturing corporations.

Eric Johnston's entry and rise to prominence in the electrical field reads like a Horatio Alger story. His mother had purchased \$2,500 of commercial paper in a company which sold vacuum cleaners and washers. Many purchasers of these machines defaulted in their payments which resulted in the machines being taken back and it was then that Mr. Johnston envisioned his first business opportunity. He took a job as door-to-door salesman and although he didn't make a single sale for the first two weeks, his perseverance was unfaltering. The next week he sold four machines and success continued.

### BOUGHT AN INTEREST

By this time he had become enthusiastic over the possibilities which this new job offered, so much so that he bought an interest in the company. Later on, he borrowed money and purchased the largest electrical concern in Seattle and paid off the entire loan in a period of six years.

Today, he is president of: Brown-Johnston Co., electrical appliance retailers; Wayne-Burnaby, electrical contractors who work on jobs of a million dollars each, or better; and Columbia Electric & Mfg. Co., manufacturers.

George F. Kindley, vice president of Edgar Morris Sales Co., who served as president of the Electric Institute during 1942 and 1943, presided at the meeting. Officers of the institute for 1944 were introduced.

L. S. McCarthy, president, divisional merchandise manager, Woodward & Lothrop; N. H. Barnes, vice president, sales manager, Potomac Electric Power Co.; K. D. Boucher, secretary, sales manager of the United Clay Products Co.; N. E. Burdette, treasurer, secretary of Refrigeration Supply Co., Inc.

### WHAT WASHINGTON NEEDS

In his talk "American Business and the Peace," Mr. Johnston said: "I think that we should describe Washington in the terminology of the light and power industry and say that we should have in Washington far more high-powered incandescent light upon our national problems and far less low-powered edicts against American business."

"It seems to me that we ought thoroughly to understand that the light and power industry and the entire electrical industry have made a major contribution to this war and production; particularly the light and power industry which, against some of the official pronouncements of certain people, has been able to provide electrical energy to the home, electrical energy to the farm, and electrical energy to the factories of the American people for war production. The electric light and power industry should be proud of the fact that it has been able to deliver the

**Don't let up -  
that'll let him down!**



Illustration is from Inland Poster showing an operation in the production of Inland-made Steering Wheels for Aircraft.

Inland's Steering Wheels are a prime example of Inland's mastery of the art of change. Their evolution over the years from wood to rubber and to plastics—and from suave, sleek wheels for passenger cars to wheels engineered and built to properly resist the strain and stress of military needs on Aircraft and Trucks—were problems well solved by our forward-looking engineers. Steering Wheels by Inland are serving on every fighting front.

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**INLAND**  
Manufacturing  
RUBBER, METAL, PLASTICS



power which makes the energy which makes the wheels go round which makes the goods, which are destroying the house that the Axis built.

"I was very glad tonight to hear Mr. McClellan talk about free enterprise or what he calls 'individual' enterprise. It was a lionhearted man who, even as little as a year or so ago, stood on a public platform and talked about free enterprise. Those who did so did it in hushed tones and didn't wish to be quoted.

"But now we have a sudden—almost an alarming—conversion to free enterprise, or individual enterprise if you wish to call it that. Even Earl Browder is for free enterprise. I am not so sure whether these people have searched their souls or are watching the polls. I am not sure whether they speak from conviction

(Concluded on Page 13, Column 1)

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Electric  
**WATER COOLERS**  
ALL SIZES FOR  
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by nearly a quarter century  
of user confidence.  
Write for prices.



MAYFLOWER PRODUCTS, INC.  
135 5th St., Richmond, Ind.

## Return to 'Free Enterprise' to Enrich The Nation Advocated by Johnston

(Concluded from Page 12, Column 5)  
or from convenience. But even though everyone is for free enterprise today, I think that we should make certain distinctions.

"I am one of those who believes with every fiber of his being that our political freedoms, our unique individualism, our enrichment and expansion as a nation, are dependent upon the job of preserving individual initiative in America. I do not hold that free enterprise is a goal in itself, but that free enterprise or individual enterprise is merely a means of attaining and preserving a manner of living which, with all of its faults, has given greater happiness, greater contentment, and higher standards than any other system that has so far been devised by man.

### I DON'T AGREE

"The other day a government official said to me—and I know that his views represent the thinking of a great many other people in and out of government:

"Eric, never again will it be possible for a poor man to become wealthy in America. Never again will it be possible for a poor man to own and develop a large business of his own. What we must do in the future is to divide what we have so that there will be no want on the part of us."

"I am one who vehemently disagrees with this theory of maturism in America. I am one of those who feels that our program must be one to enlarge our horizons, to open up new vistas of success and accomplishment; to allow the American people to see that the road ahead can lead to greater heights than anything that they have ever known before. I realize that the program will not be an easy one. Yet, I also realize that we have not reached the last frontier of American civilization, that we are bound to explore the horizons of tomorrow.

### WEST IS UNEXPLORED

"May I use an illustration. Out in the West we have 11 Western States. If I eliminate California and Washington, which are perhaps most highly developed, and substitute the two Dakotas, you have an area which is approximately the size of all of India, or of all of Europe outside of European Russia. This area of 11 Western States contains a population of about 9,000,000 people. In India there are 385,000,000 people, and in Europe outside of European Russia, 265,000,000 people.

"But, you say, there are not the resources in these 11 frontier states that are yet undeveloped. I tell you that there are more known natural resources in these 11 Western States (and they are far from all explored) than in all of India or all of Europe put together. You say that there are not the agricultural lands in these 11 Western States, and I tell you again that there are lands under cultivation or capable of being brought under cultivation by proper irrigation and reclamation procedures which will approximate the land under cultivation in India or the land under

### MASTERCRAFT ADJUSTABLE PAD AND CARRYING HARNESS

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Used and endorsed by thousands of refrigerator dealers in the United States and Canada.

Pad is adjustable to all makes and sizes of refrigerator cabinets; thoroughly protects finish of cabinet from scratches and marks during moving; easily and quickly put on or off; sturdy, lasting construction; easily pays for itself in a short time. Price \$11.75 each.

Attractive lettering of your name on pad at \$2.00 each extra.

Harness is a separate unit from the pad, is adjustable, and provides a simple and convenient arrangement for carrying your refrigerator more safely and easily. Price \$1.50 each.

Write for complete folder and prices on pads for refrigerators, washers, ironers, ranges, radios; also furniture pads and protective covers. All prices subject to change without notice.

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cultivation in Europe outside of European Russia.

"In the State of New Mexico alone there is sufficient coal in known seams and known deposits to last the United States at its present rate of wartime consumption for 450 years, and yet we don't consider New Mexico as a coal state out in the West.

"Does that indicate that our frontiers are gone? Does that indicate that there is no room for expansion in America?

"Yet the greatest expansion and the greatest frontier that our country has, lies in the enrichment of the people. We have never produced enough in America to provide a minimum modern subsistence standard of living for all of the people of the United States alone, and please do not forget that the prince's luxuries of today are the pauper's demands of tomorrow. We have only begun to enrich these people who have come to our shores to escape religious persecution, to find a new way of life in America. We have given them new horizons; we have given them new opportunities; we have given them new goals. There is something indigenous in the soil of America that makes a new race of people more productive than they were in their old habitats before.

### THE WORLD OF TOMORROW

"I could cite numberless new inventions and new processes, new techniques, and new materials of the world of tomorrow. Allow me to take just the airplane alone.

"I have no idea what the airplane will do for the world of tomorrow. All I can tell you is that in this room tonight you are no more than 60 hours from any point in the world; that within five years after this war, you will be, in Washington, no more than 30 hours from any place in the world. All I can tell you is that you will go places and do things that you have never contemplated before. What effect it will have upon our cities, upon our way of life, upon our civilization, I can't tell you. Not even if I retired into an ivory tower of meditation would I be able to describe what this one thing might do for you in the world of tomorrow.

"I wish that I had time to tell you what other things are going to do for America, but I can only tell you this evening in all sincerity that there were never greater opportunities in the world opening for our people than there will be after this war. New methods, new techniques, new products, new ways of doing things, will crowd themselves in never ending

## 'We Have Not Reached the Last Frontier'



America is at the threshold of a tremendously enriched life, believes Eric Johnston, president of the Chamber of Commerce of the United States and head of three electrical firms, who addressed the 10th annual meeting of the Electrical Institute of Washington (D.C.).

in America must use our great position as the greatest creditor nation in the world, we must use our position of strength and leadership to assist in the industrialization and to assist in the raising of the standards of living of other peoples of the world, not through a system of philanthropy, not through a system of giving things, not through a system of attempting to paint the toenails and marcel the hair of the so-called backward peoples, but by giving those peoples an inward impetus upwards by our own leadership in America.

### WE ARE STRONGEST NATION

"No one can defeat America except the American people. We are the strongest nation in the world because we have the greatest productive capacity, the greatest financial strength, and the greatest military capacity. If we only understand that military power and strength, if we only understand our position and realize in the process of our thinking the opportunities, then our goals for the benefit of our own people and for the benefit of other peoples can be attained.

"There never was a time when people and geography were placed in such favorable circumstances together. It would appear as though the Supreme Being that wrought this miracle was anxiously watching to see how this epochal test for man's capacity for grandeur might be working out. Have we the ability to meet the opportunities that lie ahead? Have we the ability to temper our souls and to raise our spirits to the magnificent opportunities, to the goals, the horizons, that are within view of us after this war? If we do have, I can tell you this evening that this is 'America, Unlimited.'

fashion on the minds and the consciousness of the American people.

"We realize that the airplane has shriveled distance, has made oceans into lakes; we realize that it has telescoped time, but that none of the hates, loves, fears, ideologies, customs of peoples have been breached. These things are pretty much the same as they were a hundred or two or three hundred years ago.

"We realize that when war ceases we will not have peace; we will have

merely an armistice, that peace can come only when people have the mind and the will for peace; and that will take a change in our thinking, a change in our conception of the world of tomorrow. It may take decades to achieve that new conception.

"We must understand that one of the principles of that concept of the world of tomorrow is greater productivity, not only on the part of the American people but on the part of all peoples of the world, and that we



YOU can add a smashing increase in sales appeal to your refrigerator by using Formica breaker strips in color. A wide range of pastel shades are available and they add mightily to good looks of your product.

These strips are as efficient as a thermal break as any other breaker strip. They are smooth and durable and retain their finish indefinitely.

Formica strips in color are easy to clean and uninjured by the most frequent cleaning. They are not spotted by a sweating or the accumulation of moisture. They are available also for use between compartments kept at different temperatures.

"The Formica Story" is a motion picture in color which shows the qualities of Formica, how it is made, how it is used. Available for meetings of engineers and business groups.

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## Manufacturers' 'Sins of Omission' Add To Servicemen's Woes, Says Contractor

### Shipping Parts Complete Will Save Repairmen's Time & Improve Jobs, Detroit A.S.R.E. Told

By C. Dale Mericle

DETROIT.—"The customer may blame the product and not the service organization" when a service job fails, manufacturers were reminded by George Johnston of Johnston Refrigeration Construction Co. here who suggested several ways for manufacturers to improve their services in a talk before the Detroit Section of A.S.R.E.

Members also heard Capt. J. H. Elliott, Army Air Forces Materiel Command, Wright Field, describe the refrigeration installation on the mammoth new wind tunnel and other refrigeration applications at this field.

#### REPAIR PARTS ARE PROBLEM

Discussing "Field Problems of the Refrigeration Contractor," Mr. Johnston passed over two main problems of today—the draft and manpower shortage—which, he said, will be solved when the war ends, and concentrated on the repair parts problem.

"Parts should be shipped to the jobber and serviceman complete," Mr. Johnston declared. "A valve plate needs two gaskets and reeds. To install a valve plate the serviceman must have the reeds and gas-

kets. If they are not supplied with the plate, the jobber must remember to include them when he sells the plate, or the serviceman will have to spend much time trying to find the proper reeds and gaskets. He may be forced to use makeshift materials, which might result in a makeshift job of servicing," he pointed out. "Pistons should likewise be shipped complete with rings and wrist pin," he added.

Manufacturers can also help the service contractor by including a name plate on an open-type compressor body which will show the body's model number, and perhaps even the proper pulley size and running speed as well as the viscosity and type of oil the manufacturer uses, contends Mr. Johnston.

Frequently, he said, a refrigeration system may not be operating correctly because someone has installed the wrong size pulley on the compressor, thus changing the running speed. Installing the proper size pulley and returning the machine to its proper running speed has corrected many difficulties, he declared.

Charging a system with the oil for which the machine was designed is also important, Mr. Johnston said. But if the serviceman doesn't know

what type of oil should be placed in the compressor, he obviously must use his own judgment, stated Mr. Johnston.

The information about running speeds, pulley sizes, and oil ought at least be contained in the manufacturer's catalog if it can't be placed on the nameplate, he said.

"The catalog also ought to show a picture of a complete compressor body assembly broken down into its details with each detail pictured and numbered," he added. "This information will be of great help to the serviceman in ordering replacement parts."

A lively discussion ensued when Mr. Johnston attacked the current practice of rating driers by horsepower. He contends that the only important data that should be given about a drier is the size of the connections and the cubical content and kind of drying agent used in the drier.

#### RATING OF DRIERS

Only by experience can a serviceman learn how much drying agent is required to solve the moisture problem of a particular refrigeration system, he declared, "and a 1-hp. drier won't necessarily be large enough for a 1-hp. system. Besides," he added, "one manufacturer may rate a certain size drier at 1 hp. while another manufacturer will apply the same rating to a much smaller drier."

Consensus of the Detroit A.S.R.E. members was that the national organization should study driers with a view of establishing standard ratings.

Mr. Johnston also proposed that unit manufacturers should assume the responsibility of making good on

the warranties of electric motors they install on their machines. He suggests that the serviceman should simply ship a defective motor to the unit manufacturer and let the latter, with his much greater prestige, obtain an adjustment.

One other request Mr. Johnston made of manufacturers was that they should send out more bulletins in connection with the conversion of refrigeration systems from one refrigerant to another. He especially wants more information on the type of oil to use in compressors with different refrigerants, he explained.

In describing the 600-ft. wind tunnel at Wright Field, the largest wind tunnel in the world, Capt. Elliott pointed out that the refrigeration plant provided for another variable in its operation. The average wind tunnel has two variables—air pressure and air velocity—but the new tunnel can also vary air temperature, thanks to a 2,250-hp. two-stage "Freon-12" indirect cooling plant, he said.

#### TUNNEL NOT INSULATED

Contrary to usual refrigeration practice, the wind tunnel is not insulated even though refrigeration is being used, he declared. Under some tests air is blown through the tunnel at between -7° F. and 13° F., resulting in heat leakage through the uninsulated structure.

During other tests the circulated air hits temperatures of between 120° F. and 140° F. Under these conditions the uninsulated tunnel permits the heat to leak out much more quickly, explained Capt. Elliott.

Maximum cooling load on the tunnel is as high as 8,000 tons, and this cooling is accomplished by operating the 2,250-ton plant for 20 hours before conducting a one-hour test, he said.

Other installations at Wright Field described by Capt. Elliott included the air medical laboratory's strato-chamber and cold chamber, and the air laboratory.

The strato-chamber is cooled by a 40-hp. reciprocating "Freon" low-stage compressor in conjunction with a 30-hp. "Freon" high stage unit. This chamber simulates air pressures and temperatures at altitudes up to 50,000 ft., and permits observance of conditions while climbing and even during a simulated parachute jump. The chamber is equipped with a vacuum pump to reduce air pressures, he explained.

A duplicate cooling plant is installed for the 15 x 15 x 12 ft. cold chamber, but this chamber is not equipped with a vacuum pump, he said. Temperatures can be varied from -67° F. to 150° F., and in addition rain, sea water, sand can be blown into the chamber. Sun lamps are also installed.

#### INNER LINER IS WELDED

To maintain close control over relative humidity, especially at low temperatures, the inner liner of this chamber is of stainless steel, completely welded in.

What are claimed to be the largest cold storage doors in the world are installed in the 87 x 25 x 25 ft. air laboratory, Capt. Elliott said. There are three sets of doors, each set being 25 x 25 ft. in size. One set is installed on the outside leading to the anteroom, the second set separates the anteroom from the test chamber, and the third set is used to divide the test room into two equal size chambers if desired.

Cooling for this laboratory is supplied by a 525-hp. two-stage ammonia machine, and temperatures are maintained as low as -67° F. As an experiment, Capt. Elliott declared, the temperature was once pulled down to -94° F. The chamber is insulated with corkboard.

Defrosting of the two evaporators installed in the test chamber is accomplished rapidly by re-routing the refrigerant so that one evaporator serves as a condenser, said Capt. Elliott.

During the meeting the A.S.R.E. members voted to re-elect their present set of officers to serve another year and decided to name two vice chairmen instead of one.

Officers for the 1944-45 season are: Ed. Kellie, chairman; Robt. C. Doremus, first vice chairman; Wm. L. Currie, second vice chairman and membership chairman; Geo. H. Poggen, Jr., secretary-treasurer.

Leon Young was chairman of the meeting.

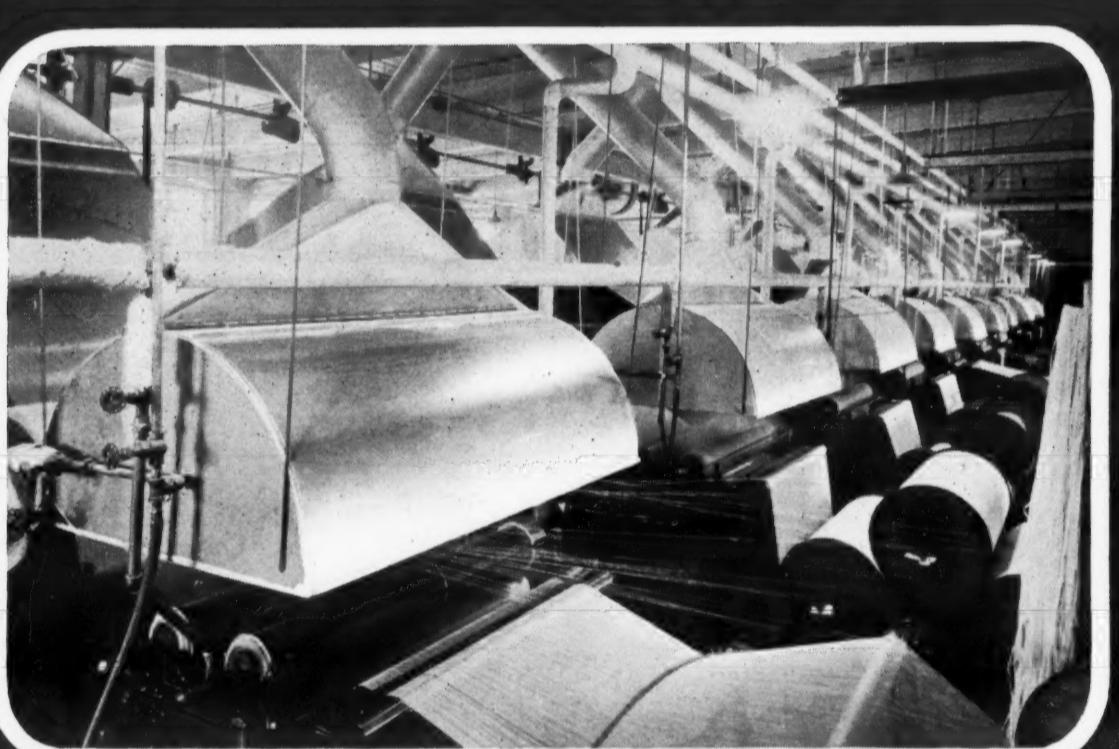
## Stove Dealers Can Build Seasonal Inventories

WASHINGTON, D. C.—Dealers and distributors of heating stoves are permitted an increase in inventories during the spring and summer to prepare for the peak demands of next fall and early winter by a recent action of the Office of Price Administration.

Most dealers are entitled to increase their inventory of coal or wood heaters by 50% of their initial allowance, and to increase oil and gas heater inventory by 100%. Applications for such increases should be made to the local War Price and Rationing Board.

Dealers who sold less than 14 coal or wood stoves or less than 10 gas heaters during the base period of 1941 or 1942 (whichever year had the greater sales) may use an alternative plan to increase their inventory, which will be based on the actual sales during the base year, not on a percentage basis. Dealers who sold fewer than three stoves must use this alternative plan.

Dealers and distributors in the far West may also borrow purchase certificates from local rationing boards to permit larger shipments.



Aluminum hoods and ducts, installed before the war, guard against rust drippings and insure long life.

*Handling moist air?*

#### PERHAPS THE DUCTS SHOULD BE ALUMINUM

Control of mill atmospheres has proved a boon to operators who are pushing war production at top speed. Practically every new development, every speed-up of machines and processes, multiplies the need for expertly planned humidification or drying systems. Controlled atmospheres also result in faster production, more uniform and better quality products.

Aluminum ducts offer many advantages: Condensation is not discolored by aluminum; drips cause no stains. Aluminum is highly resistant to corrosion, usually requiring no protective paint coatings; upkeep costs are

low. The lighter weight of aluminum simplifies installation and holds support loadings to a minimum.

Sheet metal workers all over the country have become familiar, through their war work, with the fabrication of aluminum. It's well to be laying plans now to profit by wartime experience, as you prepare to meet postwar competition. ALUMINUM COMPANY OF AMERICA, 1975 Gulf Building, Pittsburgh 19, Pa.



**ALCOA ALUMINUM**



**FIND HIDDEN  
REFRIGERANT LOSSES  
WITH  
VISOLEAK**

*Save  
TIME  
MONEY  
REFRIGERANT*

#### IT'S SIMPLE —

Just place VISOLEAK in the high side of the system. This finely-treated colored refrigerant oil will penetrate every nook and cranny and spot those hard-to-find leaks. If refrigerant can leak out, so can VISOLEAK. A red stain will mark the leak for your instant repair.

#### IT'S SAFE —

Made from the finest oils, it's non-toxic, non-poisonous, non-corrosive and non-inflammable. Can be used safely and effectively with ANY refrigerant.

#### IT'S ECONOMICAL —

Save 10% on case lots	
<b>Wholesale Prices</b>	
4 ounce bottle \$1.00	48 bottles
8 ounce bottle 1.75	24 bottles
1 pint bottle 3.00	24 bottles
1 quart bottle 5.00	12 bottles
1 gallon can 16.00	6 cans

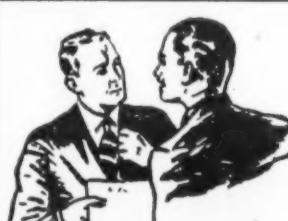
See your jobber or write for complete information

WESTERN THERMAL EQUIPMENT COMPANY  
5141 Angeles Vista Blvd., Los Angeles 43, Calif.

Please send me complete details about VISOLEAK.

Name \_\_\_\_\_

Address \_\_\_\_\_



*Have You Tried  
AIRO SUPPLY Lately?*

Next time you "talk shop" with another Service Engineer, be prepared for that question! He and plenty more like him in all parts of the country have found out through personal experience that the AIRO slogan means what it says:

*"You'll Like To Buy From AIRO SUPPLY"*

And that goes for you, too—wherever you're located.

Send for your copy of the AIRO "VICTORY" CATALOG now.

**AIRO SUPPLY CO. WHOLESALE DISTRIBUTORS 2732 N. Ashland Ave.**

Dept. B, CHICAGO 14, ILL.

## RFC Now Selling Appliances It Purchased To Aid Dealers Hit by War Controls

WASHINGTON, D. C.—Some commercial refrigeration equipment (in New Orleans only), oil and gas burners, heaters, ranges, and fluorescent lighting fixtures are being offered for sale by the Reconstruction Finance Corp.

These articles were originally purchased from dealers who, because of war controls, were unable to sell them. Under the Murray-Patman Act, the RFC is empowered to purchase rationed articles which aren't moving from dealers, permitting the dealer to relieve his storage space and giving him working capital.

The RFC may sell the articles back to the dealer, but if he has not repurchased them within 19 months, the articles are put on the open market. RFC pays the dealer his net cost plus transportation charges and a reasonable carrying charge. RFC's resale price is this total cost plus 4%.

Differential between the RFC selling price and established OPA ceilings is large enough, officials say, to permit a reasonable profit for dealers, even when transportation charges are included. Recently articles purchased in Richmond, Va. and Chicago were shipped to the West Coast where dealers resold them profitably, it was said.

Included in the RFC inventory as of Jan. 31, 1944 were 15,739 oil space heaters, 959 conversion oil heaters, 11 oil burners, 1,601 oil burning furnaces, two oil burning ranges, 31 oil burning water heaters, 191 conversion gas burners, 1,595 gas furnaces, 540 gas burning space heaters, and a limited number of fluorescent lighting units.

Prospective purchasers are advised to write to the nearest RFC office for information on the stocks. RFC field office directors are as follows:

Alabama—E. W. Long, Comer Bldg., Birmingham 3.

Arkansas—J. W. Jarrett, Pyramid Bldg., Little Rock.

California—Hector C. Haight, 523 W. Sixth St., Los Angeles 14.

California—John S. McCullough, Jr., 200 Bush St., San Francisco 4.

Colorado—Ross L. Hudson, Boston Bldg., Denver 2.

Florida—Fred H. Farwell, Western Union Bldg., Jacksonville 2.

Georgia—M. E. Everett, Healey Bldg., Atlanta 3.

Illinois—Frank M. Murchison, 208 S. Lasalle St., Chicago 4.

Kentucky—J. Fort Abell, 421 W. Market St., Louisville 2.

Louisiana—George W. Robertson, 837 Gravier St., New Orleans 12.

Massachusetts—John J. Hagerty, 40 Broad St., Boston 9.

Michigan—Arthur J. Fushman, 607 Shelby St., Detroit 26.

Minnesota—China R. Clarke, McKnight Bldg., Minneapolis 1.

Missouri—Albert L. Strong, Federal Reserve Bank Bldg., Kansas City 6.

Missouri—B. Glenn Gulledge, 320 N. Fourth St., St. Louis 2.

Montana—L. E. Choquette, Power Block, Helena.

North Carolina—John A. Campbell, Jr., 108 W. Third St., Charlotte 1.

Nebraska—Herbert S. Daniel, Woodmen of the World Bldg., Omaha 2.

New York—Thomas J. Ahearn, Jr., 33 Liberty St., New York 5.

Ohio—J. A. Fraser, Federal Reserve Bank Bldg., Cleveland 1.

Oklahoma—J. C. Eagen, Cotton Exchange Bldg., Oklahoma City 2.

Oregon—William Kennedy, Pittock Block, Portland 5.

Pennsylvania—E. Raymond Scott, 1528 Walnut St., Philadelphia 2.

Tennessee—J. M. Gardiner, Nashville Trust Co. Bldg., Nashville 3.

Texas—L. B. Glidden, Cotton Exchange Bldg., Dallas 1.

Texas—W. I. Phillips, 723 Main St., Houston 2.

Texas—L. C. Andrews, Alamo National Bldg., San Antonio 5.

Utah—Gerald L. Leaver, Dooly Bldg., Salt Lake City 1.

Virginia—W. B. Cloe, Richmond Trust Bldg., Richmond 19.

Washington—Richard M. Price, Dexter Horton Bldg., Seattle 4.

Washington—O. M. Green, Columbia Bldg., Spokane 8.

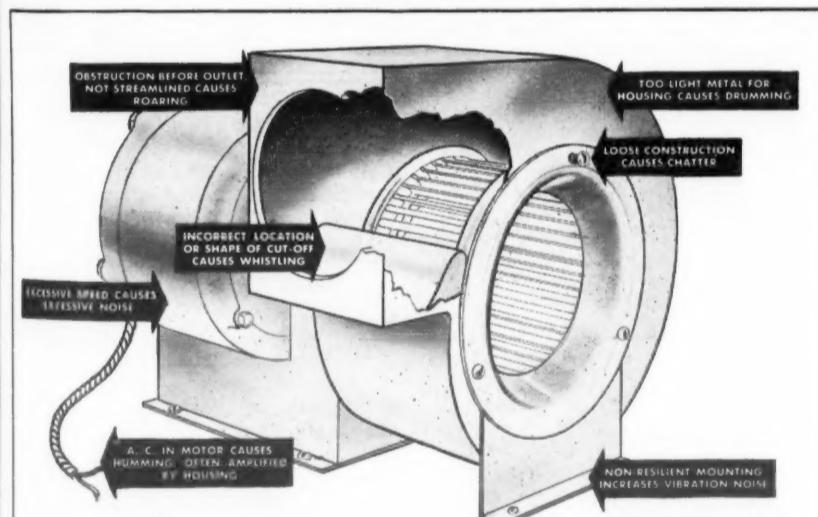
### Hunt Takes Charge of C-H Atlanta Area

MILWAUKEE, Wis.—G. E. Hunt, formerly manager of Cutler-Hammer's Indianapolis office, has been named acting manager of that company's Atlanta territory with offices and warehouse at 134 Marietta St., N.W., in Atlanta, Ga.

Mr. Hunt has been with Cutler-Hammer since 1920, working in widely diversified activities in New York, Philadelphia, Cleveland, and Milwaukee.

### Tips for Designing Air Impelling Units

No. 7 of a series



### Some Causes of Excessive Noise

THE causes of excessive noise in blower wheel units can usually be traced to one or more of the various points illustrated above. While the noise induced may be slight in itself, amplification may be imparted by the housing and cause it to be objectionable.

In most cases, the remedy is apparent, once the cause of the noise is known—for example, a mere change in weight or weight

distribution may eliminate humming due to resonance.

Prevention of objectionable noise is but one of many important factors in the design and construction of air impelling units.

By consulting Torrington's Research Laboratory, preferably during the early design stages of a unit, costly changes and production delays may be prevented.

THE  
**TORRINGTON**  
MANUFACTURING CO.

TORRINGTON, CONN.

Manufacturers of AIRistocrat Quiet Propeller Fan Blades & AIRotor Blower Wheels

### Edwina Nolan to Head Bendix Home Service



EDWINA NOLAN

ment stores, public utilities and dealers—will work closely with the manufacturers of laundry accessory items—will cooperate with universities and colleges, and with the various magazine editorial people."

Miss Nolan, for the past 15 years, has been director of home service for the General Electric Co. at Bridgeport, Conn. She was a member of the Connecticut State nutrition committee, was one of the original members of the women's advisory committee of the War Advertising Council and has served on a number of government committees. She was one of the original 10 women selected to serve on the salvage committee of the War Production Board, with direct responsibility for the New England area.

### Bohrman Named Perfex Radiator Manager

MILWAUKEE, Wis.—I. G. Bohrman, who has directed radiator sales for Perfex Corp., has been appointed manager of the radiator division.

Mr. Bohrman takes over his broader duties in connection with expansion of Perfex Radiator facilities, which will shortly occupy additional plant area now under construction. This is the fourth addition to the plant in three years, and will increase the present floor area by 15%.

He formerly served in engineering capacities with Hercules Motors Corp. and Waukesha Motors Co., and has been active in the field for 18 years.

### Pendergast Returns to Universal Cooler Sales

MARION, Ohio—Resuming the post from which he was given a leave of absence to expedite war production in the company's plant here, T. S. Pendergast again has assumed the duties of Vice President in Charge of Sales at Universal Cooler Corp., according to an announcement made recently by F. S. McNeal, president.

At the start of the war, Mr. Pendergast had the responsibility of co-ordinating expanded plant, production, and facilities of Universal Cooler's all our war effort. In addition to special refrigerating systems that are now "in action" on the far flung battle fronts of this global war, Universal Cooler's war products included precision materials for guns, planes, and tanks.

Mr. Pendergast is serving on the industry's Task Committee and helped to set up the 1944 requirements for food preservation, storage, distribution, and dispensing for the War Food Administration and to provide additional manufacturing facilities for "Freon-12." He also serves on the General Advisory Committee of the Refrigeration and Air Conditioning Industry to the WPB. In the early days of the war, he spent much of his time in Washington, D. C., advising the Armed Forces in reference to refrigeration specifications and equipment.

Mr. Pendergast has been with Universal Cooler for the past 14 years, coming to Marion when the plant was moved from Detroit in 1940.

## Millions of Americans are Learning...



Millions now know the difference between a frozen food cabinet and a genuine Deepfreeze.

That's because of a consistent campaign of Deepfreeze educational advertising in The Saturday Evening Post, American Home, Better Homes and Gardens, The Country Gentleman, Capper's Farmer, Successful Farming and other leading magazines. Attention-compelling full page advertisements!

Yes, and millions are interested in discovering how the time-tested, performance-proved dependability of

Cartridge cases, airplane nose and tail gun turrets, blood desiccating units and industrial freezing equipment are among the war products that Motor Products Corporation is proud to be making to speed the day of Victory.

#### MAIL COUPON NOW!

Motor Products Corporation  
Deepfreeze Division, 2320 Davis Street, North Chicago, Ill.  
Gentlemen: I am interested in getting full information regarding Deepfreeze postwar selling opportunities.

Name.....

Title.....

Company.....

Address.....

**Deepfreeze**  
TRADE MARK REG. U. S. PAT. OFFICE  
MOTOR PRODUCTS CORPORATION  
Deepfreeze Division: 2320 Davis Street, North Chicago, Illinois  
Main Plant: Detroit, Michigan  
Canadian Plant: Walkerville, Ontario

# Air Conditioning & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News

F. M. COCKRELL, Founder

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## Surplus Property Disposal Policy

OUTLINES of the government's policy on disposal of the 60 billion dollars (give or take a few billions!) worth of surplus property which will exist at the end of the war are beginning to take shape.

It is becoming clear that the Baruch-Hancock report will be followed fairly closely. And this report has many admirable features.

"The months to come while the war is still on are the most precious months for disposal," say Messrs. Baruch and Hancock. "Market conditions will never be better." Amen.

Redistribution is beginning already, particularly of those supplies which can be used in war industry. Some of our excess food stocks are also being released. And clothing—such as Army rejects and overstocks, and slow-moving items like cheap shoes—is quietly going into accumulations for distribution to liberated nations.

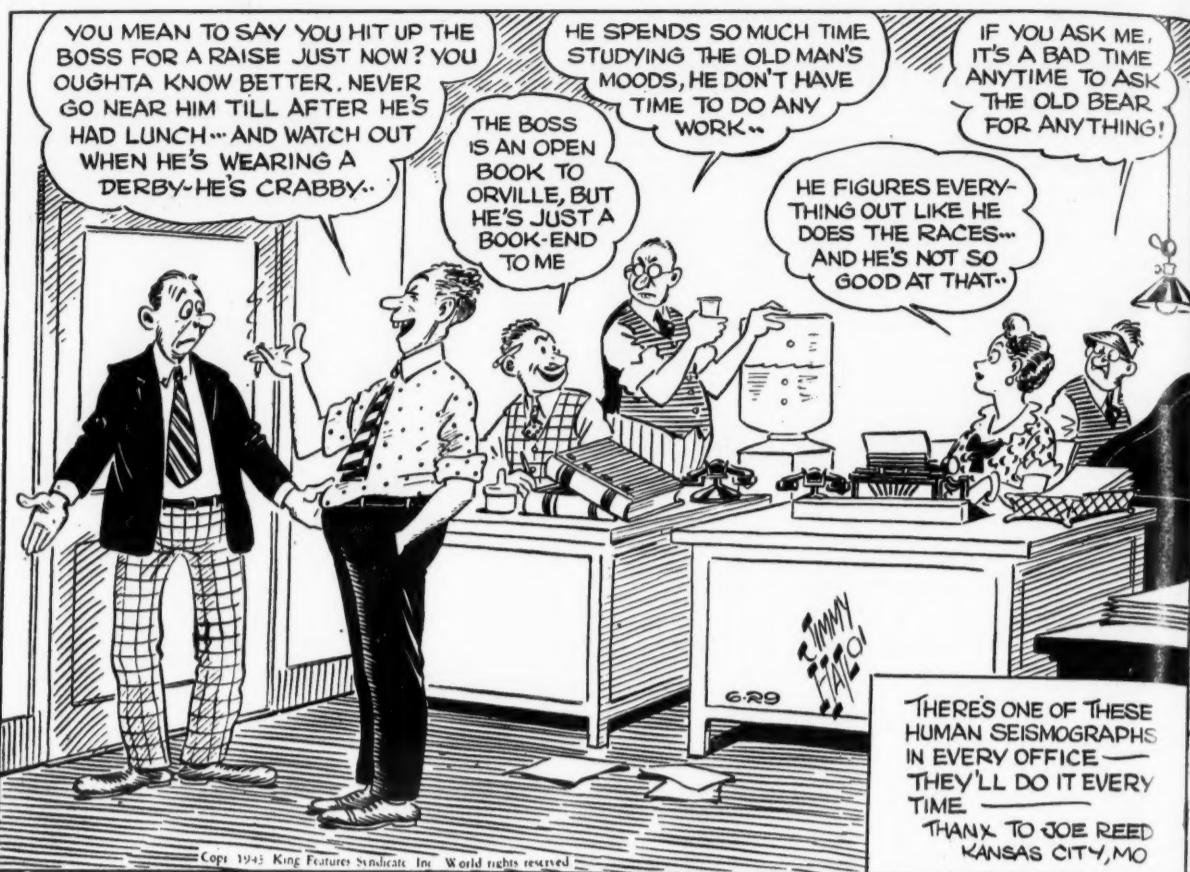
### SEVERAL GOV'T AGENCIES HAVE FINGERS IN THE PIE

Here are the government agencies which are handling the gigantic redistribution business: the Food Administrator; the Procurement Division of the Treasury (for consumer goods other than food); the Reconstruction Finance Corp. (for capital goods); and the Maritime Commission (for ships).

Baruch and Hancock insist that the interests of existing business enterprises must be protected in the disposal of surplus property. For example, they favor "dumping" abroad if the domestic economy cannot absorb surpluses without disruption.

Too, they favor closing government-owned plants if their sale would result in ruinous overproduction within a given industry. Again, they insist that plants must not be sold to private

They'll Do  
It Every  
Time  
By  
Jimmy  
Hatto



bidders at prices so low that the purchasers would gain an unfair capital-structure advantage over competitors already in the business. In this attitude they are also protecting the investment of the taxpayers.

Distributors and dealers, who have been worried lest such consumer-goods items as trucks and refrigerators be dumped in quantities through speculators, can take comfort in the Baruch-Hancock recommendation that cooperative buying by legitimate distributors be encouraged, and that the door be barred to speculators.

### SMALL-LOT SALES WOULD AID THE SMALL BUYER

To implement this policy surplus consumer goods would be offered in small lots so that those with decidedly limited bankrolls could get in on the offerings. In addition, the government disposal agencies would be authorized to extend credit and *trade and lease* property.

As for items such as refrigerators and refrigeration systems, there is no doubt that they should be channeled through existing distribution systems—possibly following the route of sale to the original manufacturer for resale through his own accredited dealers.

Those surpluses sold or lent out abroad should certainly obtain in return some token of value—say, scarce raw materials for our stockpiles, or the clinching of our rights to use airports built with American funds on foreign soil.

Wild-eyed radicals who want us to cart surplus goods out to the middle of the Atlantic, there to be sunk, or simply to give them away abroad, show their usual disregard for the taxpayer and property rights.

Experts of the Guaranty Trust Co. of New York sum the problem up as follows:

### SINGLE AUTHORITY NEEDED TO CONTROL DISPOSAL

"Government agencies should immediately establish records of their war property, and any such property becoming surplus should be promptly placed under the control of the disposal authority. The whole plan should be administered with a view to the rapid stimulation of postwar employment, the effects on existing enterprise and the interests of the taxpayers."

"Equipment and supplies should be made available, as far as practicable, in quantities permitting acquisition by small as well as large concerns—an objective that can be attained only in part, since many of the facilities consist of extremely large units.

"No class of property should be disposed of, or terms fixed, except after consultation with committees representing the industry or industries most directly affected. Property should be disposed of, as far as possible, through regular trade channels by the industries that originally produced it.

"While sale is preferable to lease, there is no vital objection to the latter in cases where property cannot be promptly sold to advantage. Whether the property is sold or leased, however, the government should not accept equity securities in payment.

### SURPLUSES IN OTHER COUNTRIES SHOULD BE SOLD THERE

"Surpluses held abroad, competitive with products of the United States, should be disposed of abroad when possible; and the disposal authority should have power to distribute property for the reconstruction and rehabilitation of devastated areas.

"When property is disposed of abroad it should be debarred from subsequent reimport into the United States, if such reimport would tend to have an adverse influence on domestic economy.

"Close adherence to these guiding principles would permit the accomplishment of the difficult task of disposal with a maximum of benefit and a minimum of disturbance to the national economy as a whole.

"Especially worthy of emphasis in any consideration of the problem is the requirement that industrial facilities be put to peacetime use under private, not public, operation. Only in this way can the transition be effected with the promptness that will be necessary, and with the assurance that the properties will be operated efficiently, economically, and with due regard to the ever-changing conditions of demand.

### GOV'T MAY BE TEMPTED TO OPERATE PLANTS

"There will probably be strong agitation in certain quarters for the retention of some facilities by the government for purposes of experimen-

tation in industrial operation. The temptation to adopt this course will be especially strong with respect to the many properties that can be sold or leased for private operation only at considerable loss.

"To pursue such a policy, except in so far as considerations of national defense may require it, would be to strike a blow at business confidence that might delay indefinitely the return of millions of men to civil employment and force upon the country a system of economic regimentation that would be the direct negation of the principles of freedom for which the war is being fought.

"There could be few surer ways of 'losing the peace' than to make surplus war property an instrument of further penetration by government into the business field."

## LETTERS

### NEEDED IN AUSTRALIA

Hallstroms Pty. Limited  
Refrigerator Manufacturers  
Willoughby, Sydney  
Australia

Editor:

We regard your publication as a most valuable contribution to the Refrigeration Industry and would be most concerned and disappointed if anything happened which would deprive us of such an interesting publication.

HALLSTROMS PTY. LIMITED

### I DON'T SEE HOW . . .

Leipsic, Ohio

Editor:

I am enclosing a Postal Money Order to an amount of \$4 to renew my subscription to the News for another year. This is an excellent magazine and I don't see how I could get along without it.

O. G. MACK

### HAS TRAINING, WANTS A JOB

1858 Roblyn Ave.  
St. Paul 4, Minn.

Editor:

I have had refrigeration and air conditioning training and would like to make connections for employment in this line of business.

Leonard John Daniel

### WOULDN'T BE COMPLETE . . .

Temp-Control, Inc.  
Peoria, Ill.

Editor:

Enjoy your publication. The week wouldn't be complete without it.

L. LANDWIRTH

# Inside Dope

By George F. Taubeneck

(Concluded from Page 1, Column 1)  
Powerline for months. Small amounts added to a tankful of gas increase mileage by 25%, the Commissioner reports.

Blending of gasoline with alcohol proves more and more successful in tests (it has long been a practice abroad). This may afford an excellent outlet for the wheat and sugar surpluses we are bound to have after the war.

Even more interesting are improvements in gasoline utilization through better carburetion.

A sample of such developments is "pressurized carburetion," now used in airplane engines. This entails the injection of a controlled quantity of water vapor into the manifold to provide "burst horsepower" for starting and quick acceleration.

If applied to automobiles, smaller engines could be used—also cheaper gasoline. We now waste a lot of power while "cruising" because of the necessity of providing excess engine power for acceleration and getting off to a fast start.

And then, of course, there is the fabbergassing announcement by a Carnegie Institute scientist that he can produce all the gasoline and oil we want by converting sugar cane and other vegetation. What wonders are in store for us!

## Madame Casey

Speaking of women, an Office of War Information release contains some interesting and amusing slants on women in the railroad business. It seems they're doing all kinds of things for the Iron Horse. For instance:

"One railroad claims that wives or daughters of railroad employees make the most satisfactory women workers. Accordingly, a young oiler and turn-table operator of Green River, Wyo., should do an excellent job, for her father and grandfather were both railroad mechanics and the uncle with whom she lives is a switchman on the Union Pacific, the same road for which she works.

"Interested in trains since childhood, she had always lamented the fact that she was not a boy and able to work on the railroad. When the chance came to give up her job as a waitress in a Green River cafe and go to work as an oiler on the Union Pacific, she was among the first to apply and is now happily holding down a man's job at a man's pay.

"Few railroad jobs, tough as they are, have the difficulties that beset two 'call boys' in El Paso, Texas. One of the 'boys' is a widow on her first job, who has worked both day and night shifts.

"I get by with the day calls promptly," she said, "but the night ones hold me up. When I call a member of the train crew and his wife answers the phone, she usually hesitates a bit and tries to find out who is calling her husband. One night I called one of the crew and he positively refused to accept the call from a woman instead of the usual call boy. I had to get the crew dispatcher to verify the call."

## Equal Pay

"Equal pay for equal work" is to get new emphasis in CIO union negotiations with management and the War Labor Board.

**MANHATTAN F/PV-BELTS**

**MORE POWER**  
Grips the grooves...  
stops slip—flexible  
construction for uniform  
"pull."

**SILENT RUNNING**  
Smooth running and  
noiseless on high-  
speed drives.

**LONGER WEAR**  
Endless construction  
reduces internal heat and  
side wear.

**THE MANHATTAN RUBBER MFG. DIVISION**  
of Raybestos-Manhattan, Inc.  
Townsend Street  
Passaic, New Jersey

CIO actually wants is "equal pay for equal hours," not "equal pay for equal work."

From the national CIO viewpoint, a centralized wage schedule would make wage negotiations much simpler. It would also take power from the locals and hand it over to the national office.

And, the leftist elements in the CIO undoubtedly realize, wage standardization could lead to standardization of prices, profits, income, and so on down the line.

Then you'd have the totalitarian state. Is that what we're fighting for?

## Export News

Russia will pay her war obligations in full, as promised by Joseph Stalin, because Russia paid all her

commercial debts to American interests before the war, according to Roy W. Gifford, vice-president and export specialist for Norge Division of Borg-Warner Corp.

"The second revolution paid off obligations of the first revolution," Mr. Gifford said. "The Russians are shrewd buyers and traders and pay their bills."

Commenting on the recent announcement by Donald M. Nelson, chairman of the War Production Board, that Stalin had assured him of Russia's determination to pay her war obligations, Mr. Gifford says that commercial companies he had represented before the war had fared well in their dealings with the Russians. One account of his company for \$1,500,000, which had been marked off the books when the second revolution began, was paid.

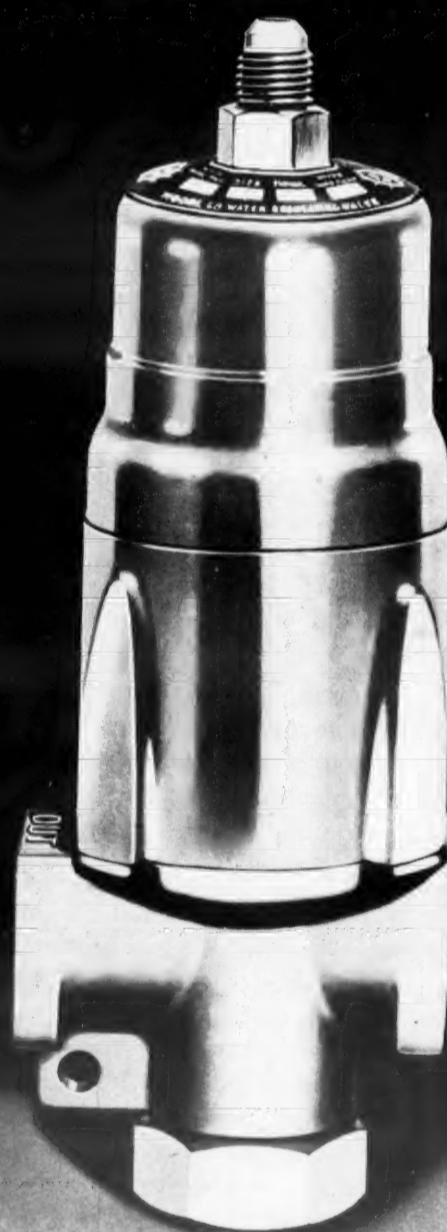
"Russia will need not only much of America's engineering and technical skill for the postwar re-building program but will require large quantities of American goods," Mr. Gifford continues. "We expect to sell them considerable quantities of refrigerating units and other household appliances despite the fact the Russians will speed up and expand their own production of necessary peace-time goods."

At the Moscow conference Stalin gave his guaranty of "repayment in full, not in token payments." From this and all he saw in Russia, Nelson returned "convinced that no two peoples anywhere in the world are better qualified to win each other's respect and admiration and friendship than the Russians and the Americans."



# Dependability doesn't happen...

IT'S BUILT INTO EVERY VALVE



**MODEL 68**  
WATER REGULATING VALVE



**CONTROLS** flow of water for water cooled compressors and condensing coils. Improves operating efficiency and economy through closer, more uniform control. Features long stroke, self-cleaning valve stem; prevents compressor



pulsation; easy space-saving adjustment. Eliminates chattering, water-hammer and other noises.  
**AUTOMATIC PRODUCTS COMPANY**  
2450 North 32nd Street • Milwaukee 10, Wisconsin  
Export Department — 13 E. 40th St., New York 16, New York

## DEPENDABLE REFRIGERANT VALVES

STOCKED AND SOLD BY PROGRESSIVE REFRIGERATION JOBBERS EVERYWHERE —  
RECOMMENDED AND INSTALLED BY LEADING REFRIGERATION SERVICE ENGINEERS

# What Experience Has Taught About Extreme Low Temperature Systems

**Editor's Note:** Mr. Olin's paper is one of the most important ever to be presented on the subject of low temperature refrigeration. It will bring readers up to date on some of the engineering and installation problems that have been turned up through experience, and it offers a sane discussion of the postwar probabilities for this type of equipment.

By C. L. Olin, Electric Refrigeration and Air Conditioning Division of Servel, Inc.\*

It has been slightly more than a year since I first reported to the A.S.R.E. sections at St. Louis and Cincinnati on the subject of "Low Temperature Refrigeration Requirements in War Production."

Since then, a number of advances in the art have been made, and in the breadth of the range of uses of low temperature producing equipment.

Your program committee felt a review at this time might be of interest and because we at Servel have been exposed to many of these developments, we have been accorded this privilege to present the picture as we see it.

Time has exerted its stabilizing influence and currently the approach to any of the various problems is much more deliberate and scientific than was true two years or even 18 months ago. And it is true that some of the "dramatic" aspect is lacking as compared to the popular con-

\*Address given before the Fifth Annual Canadian Refrigeration Conference.

ception originally.

It can still be said, however, that none of these fine high altitude bombers and fighter aircraft that are being produced today could leave the ground were it not for the application of controlled low temperatures used in instrument test apparatus.

Also, the benefits to metallurgy derived from the application of low temperature equipment have contributed a great deal to the speeding up of our war production machine.

The heat treatment of aluminum alloys utilizing low temperatures has had its part in the building of sturdy, rugged planes, increasing the strength of their structure and enabling them to withstand strain of almost, unbelievable speeds and of combat maneuvers.

In addition, the advances made in the processing of blood plasma and in the processing of that newest of discoveries, penicillin, have been possible because of the availability of controlled low temperatures.

The urgencies of war, the needs

that simply have had to be filled regardless of cost, have called for bold venturing, and exploration of methods that would have been applied only with hesitation, and at best taken perhaps years to find acceptance, under peacetime economy.

Even so, we at Servel have found it necessary to extend a word of caution to the uninitiated who have felt that because they had been engaged in refrigeration activity in the past they could quite readily master these new sub-zero application problems in their stride.

To fully understand why we have counseled these people to stop, look and listen, one would have to be confronted with the situations we have faced and are still encountering here and there, over the country.

As a typical example, let me tell you of a service engineer from a midwest city who appealed to us about two months ago to help solve a -70° F. application which he had been nursing for better than a year.

It seems about two years ago a local aircraft plant required a number of cabinets for testing instruments down to -70° F. It is true, not many sources for this type of apparatus had been established at the time but be that as it may, the job was attempted by a refrigerator dealer utilizing revamped domestic refrigerators.

These were turned over on their

backs, the legs removed and insulation added to the inside of the liners. Then plate type evaporators were applied and these connected to a rather standard (single stage) F-12 condensing unit (later charged with

Almost any number of such instances might be repeated here. In general these difficulties have found their root in the attempt to apply the same practices that are applicable to conventional refrigeration work. There is a difference, and to better understand this, let us first review some of the significant characteristics of the condensing units being used in this sub-zero activity. For the purpose of this discussion, reference is made to those used in obtaining temperatures in the range of -50° F. to -120° F.

These fall into two general classes, those employing the cascade cycle, and those employing the multistage cycle.

In the cascade cycle, one condensing unit is used to refrigerate the condenser of a companion condensing unit (each condensing unit being complete in itself in all respects).

This, of course, results in lowering the condensing pressure of the companion unit (or first stage as it might be termed). This cycle is used to advantage particularly where two different refrigerants are desired.

One manufacturer employs ethane in the companion unit (first stage) and propane in the second unit, or second stage. This permits securing low temperatures without operating below atmospheric pressure in the first stage evaporator, and a controlled temperature as low as -120° F. can be obtained.

Frankly, in this case the user was simply lucky that the balance of the equipment (cabinet and evaporator) will apparently "get by," and that it is not going to be necessary to replace these as well as the condensing units.

## Types of Field Problems

In another case a U. S. Navy expediter called us, frantically seeking help. He had an installation in mind utilizing conventional compressors that just wouldn't "stay put" but a few days at a time.

He had heard of the availability of special multistage condensing units designed for such work, and wouldn't we please help him in his predicament.

It was later found the principal fault of the original compressors was in the lubrication system, which only served to demonstrate that these applications are usually beyond the sphere of regular standard compressors.

In a third case the specifications called for a 20-hour pull-down time, down to -75° F. in a rather large walk-in test cooler. The equipment as installed actually required three days to reduce the temperature to -50°. In that instance a number of heat load sources had been overlooked, among them being the concrete in the floor and the residual heat of the insulation itself.

To correct the condition, considerable additional refrigerating capacity had to be supplied—both in evaporator and condensing unit—resulting in a loss of many dollars on the part of the seller or contractor.

With the availability of F-12 and particularly since the availability of F-22, it has been found a great majority of applications can be accommodated utilizing only the one refrigerant and the multistage condensing unit cycle.

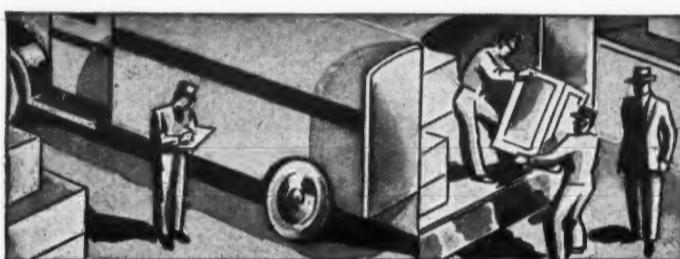
## Clearance Volume Important

Either method results in a reduction of the compression ratio and to secure the full benefit, the clearance volume in the cylinder must be held to a practical minimum.

By clearance volume is meant that volume above the piston (at the top of the discharge stroke) and around the piston valves, and including the volume of the discharge ports in the valve plate—all of which must be reduced as much as possible. However, since it cannot be eliminated, at least some re-expansion in the cylinder must occur.

The adverse effect of this can be minimized where the discharge pressure is less; in other words, where the ratio of discharge to suction pressure is less, or, stated another way, where the compression ratio is less (expressed in pounds absolute pressure). Under these conditions, greater efficiency and capacity and lower temperatures can be secured.

(Continued on Page 19, Column 1)



## A REPUTATION FOR SUSTAINED

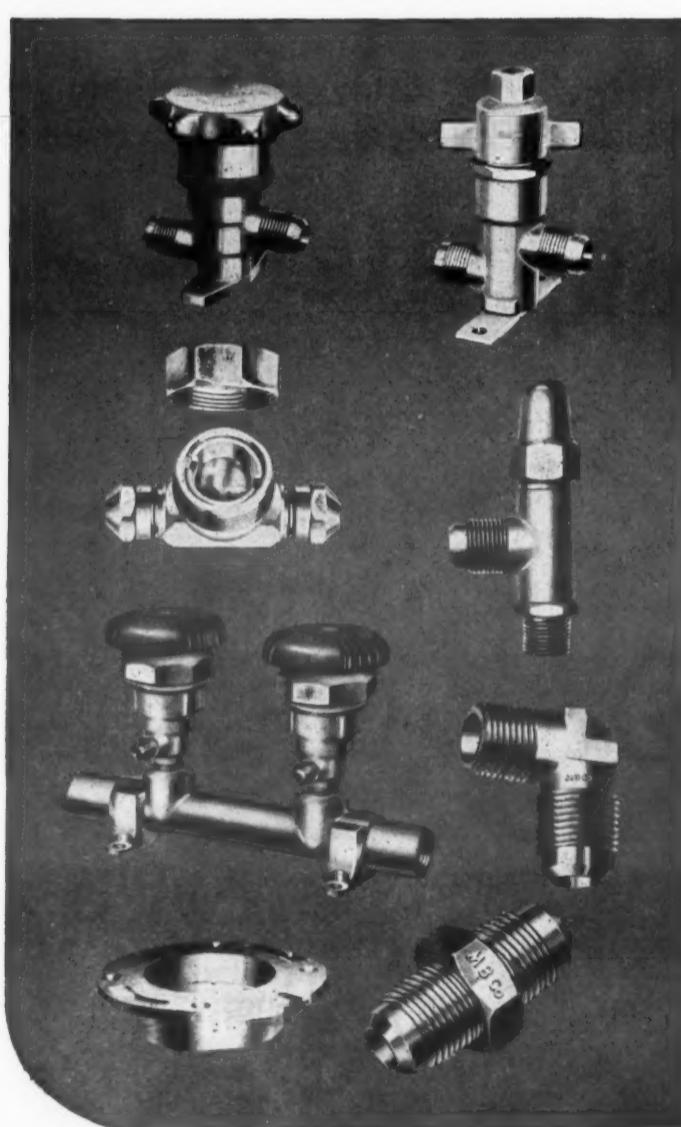
# DELIVERY

Although war time production and restrictions have necessarily made it very difficult to produce and ship goods to our customers at a rate approximating our peace time rate, we have managed to supply our customers with their essential requirements in reasonable time.

This condition does not prevail through mere chance. When the war broke out we made an extensive study of how we could best serve our customers within existing regulations. This, together with the fact that we are not dependent upon outside sources, but manufacture and control all the parts and operations of our products from the virgin metal to the finished goods, is largely responsible for our favorable position today. WE HAVE A REPUTATION FOR SUSTAINED DELIVERY.

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## New Considerations In Sub-Zero Engineering

(Continued from Page 18, Column 5)

For example, consider a conventional low temperature application, such as an ice cream cabinet. Here the suction pressure will run about 2 lbs. gauge (-15° F.) using F-12 and with a head pressure of 125 lbs. gauge, the ratio of the absolute pressure will be:

$$(125 + 14.7) \text{ is to } (2 + 14.7) \text{ as } 8.37 \text{ is to } 1$$

Whereas a compression ratio of about 5 to 1 is considered a practical optimum, single-stage condensing units are regularly maintaining acceptable performance down to -40° F., under which conditions the compression ratio is approximately 15 to 1 (125 lbs. and 10.9 in. vacuum or 139.7 and 9.32 lbs. absolute).

Through the technique of compressor staging this compression ratio can be divided into steps, making it possible to operate each stage of compression closer to a practical ideal; for example, in a two-stage system operating at -75° F. in the evaporator and at 110 lbs. head pressure, the compression ratio sequence would be as follows:

First Stage -75° F. corresponds to

23.01 in. vacuum or 3.4 lbs. absolute. The head pressure equals 2 lbs. or 16.7 lbs. absolute, or a compression ratio of 4.93 to 1.

Second Stage — Suction pressure (discharge of first stage) equals 2 lbs. or 16.7 lbs. absolute. Head pressure equals 110 or 124.7 lbs. absolute or a compression ratio of 7.45 to 1.

This would result in considerable improvement in efficiency. In fact, an attempt to accomplish the same operating condition with a single-stage type compressor would be practically impossible on any sort of a production basis. Similarly, where lower temperatures than -75° F. are desired, three-staging is used and the total compression ratio is divided into three steps.

Now let us examine a typical capacity and performance curve of a three-stage condensing unit.

At -94° F. the gauge readings were as follows:

First stage 26.2 in. or 1.83 lbs. absolute suction  
First stage 13.2 in. or 8.24 lbs. absolute discharge or 4.5 to 1 comp. ratio  
Second stage 13.2 in. or 8.24 lbs. absolute suction

Second stage	8 lbs. ga. or 22.7 lbs. absolute discharge	or 2.76 to 1 comp. ratio
Third stage	8 lbs. or 22.7 lbs. absolute suction	
Third stage	120 lbs. or 134.7 lbs. absolute discharge	or 5.92 to 1 comp. ratio

100° F. It hasn't been an easy assignment and its solution required a great deal of experimentation under circumstances requiring unprecedented speed.

Likewise, thermostats have been made available by which it is now possible to hold very close differentials even at these extremely low temperatures—and, of course, such a control is not a three or five dollar item.

### 7 Points to Consider

As if these were not enough to suggest care and caution, we have found it expedient to call attention also to the following:

1. Leakage per degree for a given insulation thickness at 150 to 200° T. D. can be anywhere from 1½ to 2½ times as high as that used for more conventional temperature differences.

2. Evaporators should have enough surface to handle the load at from 5 to 8° T. D. A temperature difference of 20° F. between coil and air is not unusual in normal commercial practice but if we can reduce this to 5° in a stratosphere cabinet, we will cut the size and cost on the condensing unit about 50%, to handle a given load.

3. Every precaution should be taken to avoid undue pressure drop in the evaporator and suction line. A study of the properties of either F-12 or F-22 will reveal that as little as two pounds pressure drop can reduce the capacity as much as 40% (at -80° F. evaporator temperature —F-22, and 53% at -70° using F-12).

4. Motors of multistage condensing units are usually fully loaded at around -30° F. evaporator temperature and some method of keeping pressures below this point is necessary or the unit will fail to start initially or after a shutdown.

5. All possible heat sources such as lights, motors, and the product (including the evaporator mass in itself) should be calculated in determining the total load.

6. Care should be exercised in determining the load where a specified rate of pulldown is involved. For in reducing from one specified temperature to another, not only is leakage involved but the stored heat in all the internal material and parts, including the evaporator and about one-half of the mass of insulation, must also be taken into consideration.

7. And lastly, a generous allowance should be included to provide for the cost of initial adjustment, changes and readjustment during the warranty period.

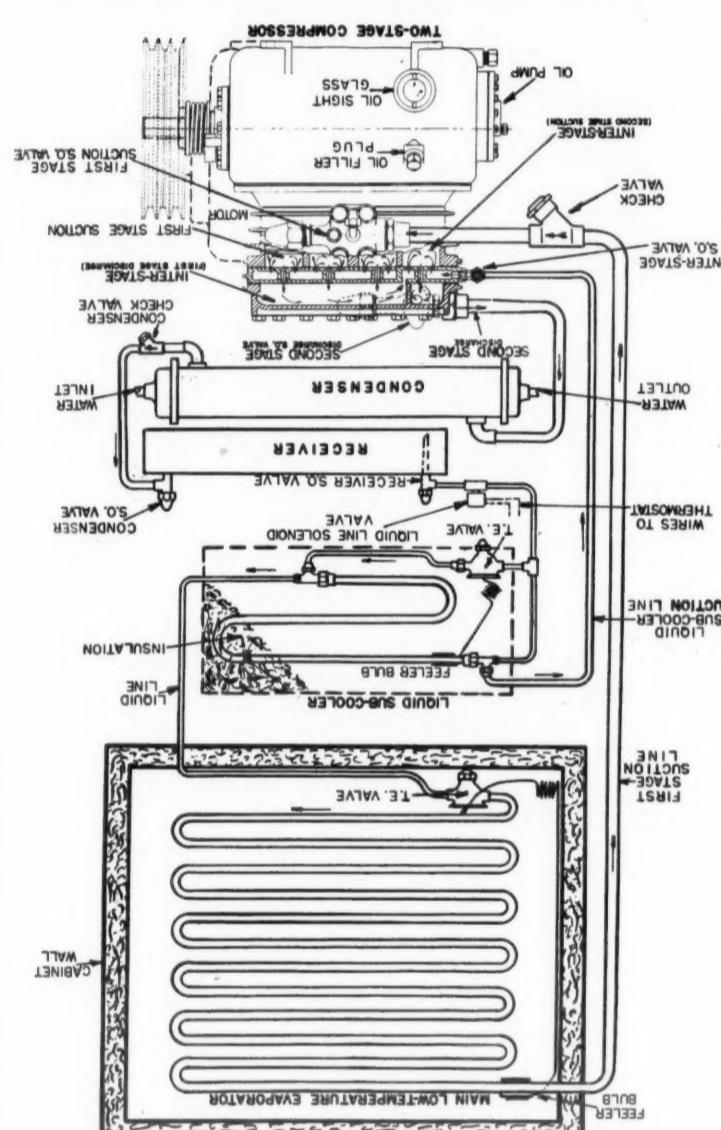
The point is, the successful "sub-zero" and "stratosphere" applications which have been made to date have in each case been the result of a carefully planned and comparatively long experimental program by each manufacturer. Test jobs have been set up based on the best available "paper" calculations, after which each element has been modified or replaced several times on a more or less "cut and try" basis until a practical working assembly was developed and then duplicated in production.

It is obvious, therefore, that even those firms having wide experience in ordinary refrigeration work cannot hope to seize upon a set of specifications for a "stratosphere" installation and promptly put in a bid with guaranteed performance, based on slide rule calculations and rule-of-thumb.

After hearing all this, you are probably asking yourselves these two

(Concluded on Page 20, Column 1)

### Cycle of a Multi-Stage Type System



Single compressor 2-stage refrigeration cycle illustrating the use of the liquid sub-cooler to remove heat from liquid refrigerant entering evaporator through main expansion valve.

## "REGROOVED" for Better Service

IF you read the recent announcement that Westinghouse Air Conditioning in the larger applications had been moved to the Westinghouse Electric Elevator Company, you may have wondered why. What does air conditioning have in common with elevators? Several things:

1. Most air conditioning systems, like elevators, are "tailor-made" jobs, from the manufacture of the equipment through the final installation.
2. They both require engineers at the factory and in the field who are capable of this type of manufacture and application.
3. From long experience, the Westinghouse Electric Elevator Company's factory and field organization is fully equipped to handle such work from beginning to end.

Thus, by a "regrooving" of responsibility — utilizing to best advantage, the engineering talent and facilities of a great company — service to the planners, installers and buyers of Westinghouse Air Conditioning is vastly improved.

For information and engineering assistance on elevators and air conditioning in essential wartime uses or post-war plans, call your nearest Westinghouse office, or write Westinghouse Electric Elevator Company, 150 Pacific Avenue, Jersey City 4, New Jersey.

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## Use of Sub-Zero Plants Is Likely To Continue

(Concluded from Page 19, Column 5) questions:

First—Just where does the service engineer fit into this picture, and Second—What are the future prospects of development in this field currently and postwar?

In answer to the first question, let me say the service engineer is very definitely a vital factor. In so many, many cases the entire success of the finished installation has depended upon the intelligence and resourcefulness of the service engineer because it was he who kept those particular jobs in proper and continuous operation.

One gentleman, prominent in our industry, has referred to the service engineer—the independent service engineer in particular—as the "sleeping giant." He had in mind the position of the service engineer in the postwar distribution of refrigeration equipment, but the reference could be as applicable to your present day position as regards these subzero applications. A great deal depends upon you, and I don't believe you have been fully awake to the possibilities before you here.

### In Aircraft Production

Now for the second question. To begin with, what about aircraft instrument testing?

It is obvious that so long as the war lasts, the race will continue, in the production of faster planes to

fly at higher altitudes. Therefore, every part of the operating mechanism, including engines, landing gear, panel instruments, super-chargers, oxygen valves and even complete sub-assemblies of the planes' structure must be tested for behavior under conditions existing in the stratosphere (namely, approximately -70° F. and 5.5 inch pressure absolute at 40,000 ft.).

This is an intensely important phase of production inspection. The complete "stratosphere chamber" includes evacuating equipment, heating elements and provisions for varying the humidity—in addition to the refrigeration apparatus involving mostly three-stage type condensing units.

As for postwar, it is generally conceded that we will, after peace is won, go on to even further explore and utilize stratosphere flying for commercial transportation. Continued need for suitable refrigerated test apparatus is to be expected.

Secondly, aluminum alloys still stand out as the most suitable for basic aircraft construction. To secure the greatest strength, heat treatment will continue to be required, and by the same token, refrigeration will be required to hold the aluminum sheets, forgings, rivets, etc. in an annealed state until used in the plane. Temperatures currently used vary from -35° F. to -50° F. and both single and two-stage type condensing units are used.

Here, too, the need for this type of refrigeration is expected to extend into the postwar period.

### More in Metals Treatment

Thirdly, in the field of stabilization of metals by low temperatures, the ground has only been scratched.

Seasoning, or stabilizing precision gauges and tools "artificially," utilizing mechanical refrigeration, is a comparatively new practice. Devious and laborious methods were used heretofore, even to exposing the semi-completely machined parts to the elements for a season or two.

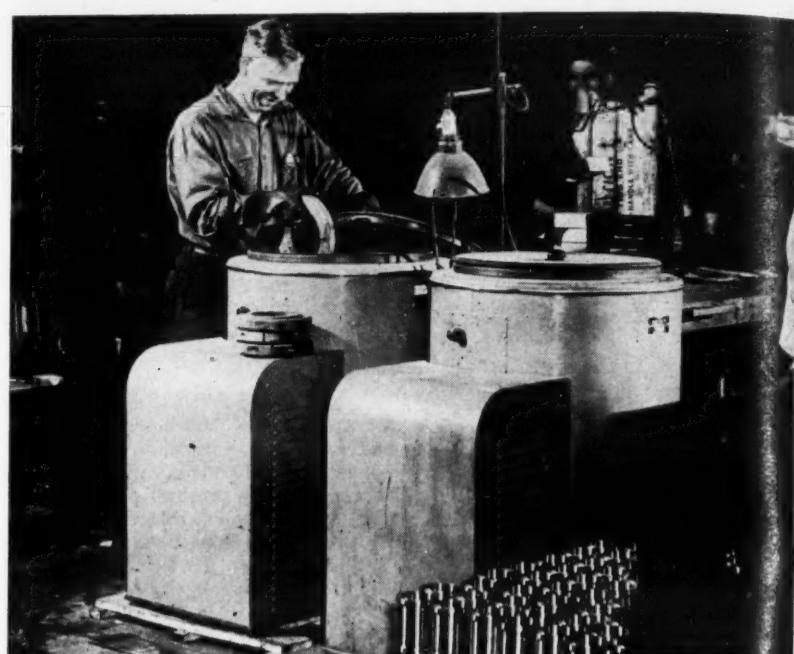
The point is, in non-ferrous metals a change takes place over a period of time which metallurgists refer to as growth; this at times takes the form of warpage, but usually appears as a slight irregular enlargement of the part. For precision gauges and tools this obviously cannot be tolerated and in the past many of these inherently high-cost parts had to be rejected and scrapped.

Speed in the production of these gauges and complete reliability have been obtained by the application of this artificial seasoning.

Here again the revelation of these advantages of low temperature refrigeration under impetus of war needs will carry over to contribute to more efficient handling of peacetime needs.

And, fourth, the field of "heat treatment" of alloy steels through the use of low temperatures holds great promise.

Here, metallurgists have discovered cutting tool life (using high speed steel) can be improved from 300 to 400%.



Expansion fit processing by means of refrigeration. System consists of a two-stage unit developed by Deepfreeze. Mr. Olin examines the possibilities for such equipment in peacetime in the accompanying article.

Metallurgists refer to securing a more complete conversion from one form of molecular structure to another, or precipitation of the carbon to a point where practically the utmost in hardness can be secured.

The savings in material—and more important, man hours—by extending the life of these cutting tools predicts a bright future for the use of subzero refrigeration in these types of applications. Findings to date indicate the optimum range to be from -100° F. to -150° F.

And the fifth on our list, blood plasma and penicillin processing, has been publicized so generally there is little to add here as to the future prospects.

It might be said, however, it is conceivable that the same method of dehydration (desiccation under a high vacuum) will be extended to the processing of many drugs and possibly certain foods. No change in the quality of the substance occurs under this method and no doubt much further development will take place.

And in manufacturing, the shrink fitting or rather the expansion fitting of parts, utilizing low temperatures, has only seen the beginning of its possibilities.

In addition, we will continue to

need low temperature test apparatus for sundry laboratory testing, of oils, synthetic rubber, plastics, etc., etc.

And finally, it is certain we will be utilizing the knowledge gained in this work, in approaching the problems of designing postwar home and farm freezers, locker plants, ice cream cabinets and frozen food cabinets.

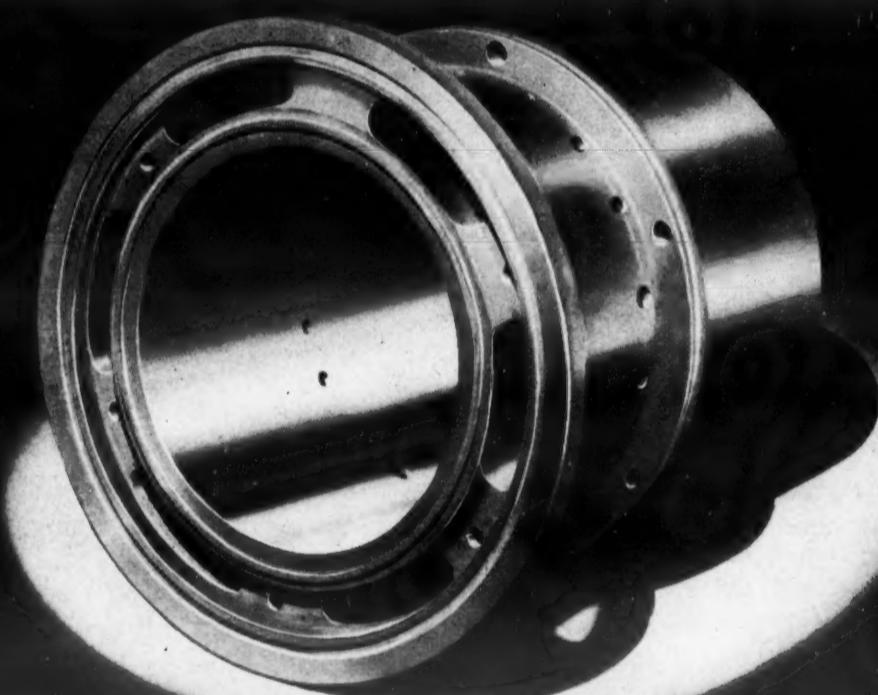
Many of these subzero applications respond to the same general service procedures that you service engineers are regularly employing. However, others are rather involved, not only as regarding the refrigeration apparatus proper, but also as regarding the accessories, controls and circuits required to accomplish wide ranges of functions.

The industry—in fact, to an important extent the war effort—will be dependent on you service engineers to keep these special subzero installations operating properly. I'm sure you will welcome this as a challenge and an opportunity.

In conclusion, let me say we all have something at stake here. We have a war to win.

Fortunately, in the refrigeration industry we can contribute most by continuing to do that thing we know best how to do.

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ciency on the job by the simple method of replacing the cylinder liner is an outstanding design feature of Chrysler Airtemp's famous radial compressor.

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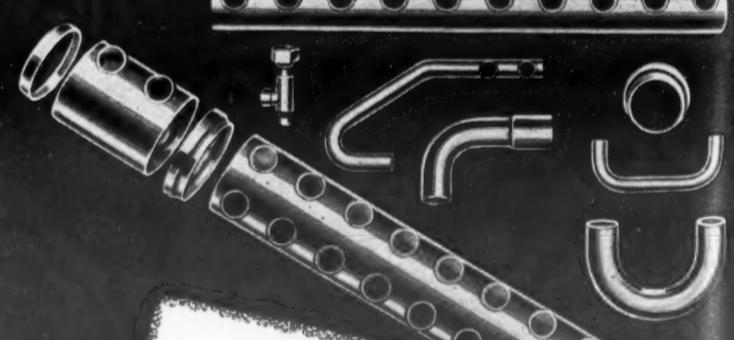
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## Georgia Utility Holds 2-Day Locker School

### Experts Discuss Design & Operation of Locker Plants, Quick Freezing Methods

ATLANTA, Ga.—To train its engineers and agricultural representatives, as well as those of the state agricultural extension service, experiment station, and department of education, for assisting in the planning, selection and operation of freezer locker plants in Georgia, the Georgia Power Co. held an intensive two-day school on the subject last month.

More than 60 persons attended the two-day session to arm themselves with up-to-date information concerning the application for priorities to build freezer locker plants, and the engineering and operation of such plants as successful modern food-processing factories.

#### NEW MANUAL DISTRIBUTED

Highlight of the meeting was distribution of a new 92-page manual compiled by the Commercial Customer Service Division of the Georgia Power Co., entitled "How to Select and Operate a Freezer Locker Plant Successfully." The manual, profusely illustrated with photographs of Georgia plants and charts, will be distributed to vocational agriculture teachers, county agents, and chairmen of community groups endeavoring to obtain freezer locker plants, as well as to the rural engineers and managers of the power company.

Many of those attending the freezer-locker plant school were surprised to hear, and later read in the manual, that only 26 freezer-locker plants had been placed in operation in Georgia but that 29 were planned for construction upon priority approval by the War Food Administration and the War Production Board.

L. W. Gray, rural service manager of the power company, stressed the importance of a full complement of meat-processing facilities in projected freezer-locker plants in Georgia. He pointed out how Southerners prefer cured pork, especially hams and bacon, and the consequent need for plenty of salt-curing room

age, and that required for the chilling and aging room.

Dr. J. G. Woodroof, food technologist of the Georgia Experiment Station and nationally cited for his research on frozen foods, covered three topics that are vital in the frozen-food world: the freezing of fruits and vegetables, the packaging of frozen fruits, and the thawing and use of frozen fruits. He contributed detailed chapters on these subjects to the freezer-locker plant manual.

#### THE UTILITY'S INTEREST

W. B. Farnsworth, customer service manager of the power company, pointed out the utility's interest in freezer-locker plants, in opening and closing talks at the school. "The power company is promoting the construction and operation of freezer-locker plants in Georgia because it will help improve the cold-cash income and standard of living of our farm families," he declared. "Increased income will make it possible for them to buy and enjoy more electric appliances in their homes. The revenue from power consumed by freezer-locker plants is, of course, a secondary interest we have in the expansion of the industry."

It was pointed out at the school that the Georgia Power Co. back in 1941 had designed and merchandised a 50-locker plant for use in connection with community canneries. Twelve of these plants were sold, but only six were installed before war caused the WPB to halt construction and delivery of the others. In the present program, the power company is not selling any equipment, Mr. Farnsworth said. "We only endeavor to assist individual

### Locker Industry Expands In Georgia



One of the principal speakers on the program of the freezer-locker plant school held by the Georgia Power Co. in Atlanta on March 8 and 9, Dr. J. G. Woodroof, nationally famous food technologist of the Georgia Experiment Station, points out the location of existing and proposed freezer locker plants in Georgia. Watching are (left) Mrs. Christine Ballard, Georgia Power home economist; R. L. Brooks, commercial customer service supervisor who was in charge of the school, and Hoyt Turner, professor of food processing at the University of Georgia.

customers or groups in planning for a freezer-locker plant."

The 26 plants in existence in Georgia, according to the new manual, range in size from 12 lockers on a dairy farm near Calhoun to 500 lockers at two of the state's oldest, and privately operated, plants—those in Albany and LaGrange. Plants that

have just been placed in operation include a 365-locker plant at Commerce, and a 410-locker unit in Elberton.

Of the 29 plants for which plans or construction are underway, the majority are to be built with private capital but operated at low community-cooperative rates.



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## Bribing of Prisoners & Machine Shop Production of Parts Put African Cooling Plants Back In Operation

### But Reconstructed Base Is Abandoned When Rommel Is Driven From Africa

By Irving Wilson, Superior Valve & Fittings Co.\*

At 2 o'clock in the morning of May 27, 1942, together with 1,400 other technicians of all descriptions, I boarded the USS "Chateau Thierry" at Charleston, S. C., bound for an Army Air Forces base at Curaçao, East Africa.

There were three of us that were called refrigeration "technicians" and one refrigeration "supervisor." Our job was to maintain existing refrigeration equipment of both Italian and American make which was supposed to have already been in operation at the base.

When negotiating our contract with Douglas Aircraft Corp., we were given the impression that as so-called "experts" we would be afforded first class accommodations. Imagine our chagrin when we found the USS "Chateau Thierry" to be outfitted for handling 1,000 troops for a trip of short duration and 1,400 of us were jammed in for a trip that actually required 57 days.

Two hundred and fifty of us were given bunks in hold No. 6, which normally would accommodate 200. The bunks were installed in tiers four high, and in some cases, five

high, where ventilating ducts would permit.

The morning we sailed we were not permitted to come above deck until we were out of sight of land. We were quite surprised to find that our escort more than equalled the number of transports and freighters in the convoy. There were three troop transports and one Liberty ship. As an escort, there were four destroyers and a battleship.

Our first port of call was Bermuda. We were there for about six hours, during which we re-fueled.

#### Extra Duty Means Extra Food

While at Bermuda, several of us volunteered to do various jobs on the ship such as standing watch, working in the mess hall, working with the gun crew, etc. By taking these extra duties we were given two additional lunches during each 24 hour day. Otherwise, those that did not take special duties were given only two meals a day—at 9 a.m. and 5 p.m. The extra lunches were at noon and midnight.

Boat drill was held every day except Sunday. During this drill everyone had to stand at their boat or

raft station for one hour while living quarters were being inspected by the ship's officers.

About eight days out of Bermuda, our United States escort left and was replaced by two British Corvettes, which in the distance looked like small row boats. We gathered from this change that we were near our second port for re-fueling. On the second day after our escort change, we arrived at Freetown, Sierra Leone, West Africa.

We spent a rather hectic week at this port. The heat was terrific, and the water in the bay so polluted that they would not permit us to use it for bathing. There were about 250 ships of all descriptions in this harbor for re-fueling and waiting for convoys to be made up. During this stop we experienced a tropical storm which certainly was a relief from the heat and which gave us a chance to take a shower by standing on the deck in the rain.

We left Freetown in a convoy of 32 ships, including an escort of two of England's largest battleships, the Rodney and the Nelson; also three destroyers, which stayed with us for eight days.

At this time, we started to run out of supplies, cigarettes being one of the first. The first choice of the existing supply of cigarettes was given to the crew, who would sell them to us "civilians" at an average price of \$1 a pack. Food became more scarce, and the quality gradu-

ally declined. In fact, at no time was the quality too high.

One menu which seemed to predominate was the usual rice and some sort of meat mixture that had the appearance (and we thought, the taste) of canned dog food. This mixture was heated and put on a piece of dry stale toast. This conglomeration was given a name by the fellows which would not be too difficult for you to imagine.

On June 21, we were told that the following day we would cross the Equator and that King Neptune and his followers would come aboard and initiate all landlubbers into the Loyal Order of the Shellbacks. This ceremony was being prepared by the fellows that had previously crossed the Equator and were already Shellbacks. The landlubbers were tipped off that the usual procedure was to duck the present Shellbacks the night before the ceremony. This was done, to the sorrow of several of the landlubbers, as they paid the penalty the following day.

#### Shellbacks Give 'Em the Works

The ceremony was a rather lengthy affair, as there were about 1,500 to be initiated. The procedure was as follows: The men were lined up in groups of 20 and marked across the face or on some other part of their body with red or green paint. The red paint indicated that this group of landlubbers helped duck the Shellbacks the night before, and consequently were to "get the works." The green paint indicated that the punishment was to be rather mild. Unfortunately, some of the red paint was daubed on me by mistake, as the fellow ahead of me and behind me really had it coming to them. After leaving this spot, we had to run the gauntlet of several fellows with paddles. Very few of them missed as you passed.

Then we came before King and Queen Neptune, who gave us a penalty of some sort or other. A typical one was kissing the queen's breasts which were improvised with grapefruit halves. We were then placed in the barber chair that was built up on the edge of a large tank filled with salt water. While the barber was supposedly shaving off the hair on the heads of us that had any, someone would trip the chair, and back we would fall into the tank, where we were greeted by more Shellbacks and ducked several times, to their merriment. After this we received a few more swats with the paddle. Then we were considered Shellbacks and given a certificate of this fact, which I prize quite highly.

#### A Low-Temperature Job

The temperature the day we crossed the Equator was around 55°, much lower than we previously had experienced just a few days before.

About five days after crossing the Equator, we had our first exciting alert. At 12 o'clock noon I had just gone on watch when the alarm was sounded for all passengers to go to their quarters. A ship had been sighted on the horizon and had failed to answer our ship's signal. Our escort at this time had dwindled down to one destroyer, which at once started to lay a smoke screen for the protection of the convoy. Our ships went into battle formation, which gave us a very peculiar feeling. After about 20 minutes sus-

pense, it was discovered that the ship in question was friendly and had come to join the convoy.

At this time a very serious shortage arose in our supply of toilet paper; the fact is, it was rationed at the rate of six sheets per man per day, and was issued each morning to each man as he was leaving the mess hall after his breakfast. This was quite an experience.

#### Dirty Work at Durban

Several of the ships left us at Capetown, South Africa. The balance of the convoy proceeded on to Durban, South Africa, arriving there on July 4. At this port we were given shore leave for 1½ days. In Durban they were enjoying their winter season, which is very similar to our summertime. For conveyance around the city, Zulu natives would haul from two to three fellows in the rickshaws—a mile for three shillings. Most of the Zulus doing this work were large fellows ranging from 6 feet to 6 feet 6 inches tall. We were all warned before leaving ship that we should be back in our quarters before 11 p.m., as Durban was blacked out and that hold-ups and murders were not uncommon.

Some of the boys did not adhere to this warning and imbibed too generously. Some of them were found the following morning minus everything they owned, including even their shoes and socks. Many of them were in badly mangled condition. Durban, however, is a very beautiful and interesting city, despite the fact that we got a bad impression of it during this blackout.

#### Thoughts of Torpedoing

On July 6 we left Durban with plenty of odd thoughts running through our mind, because during our stay in Durban we had talked with several fellows who had been torpedoed in the Mozambique Channel which we thought was on our route and which we knew to be extremely "hot" territory. However, our convoy gave Madagascar a wide berth, and we reached Aden, Arabia, without incident. After re-fueling, we left the convoy and proceeded on alone, arriving at Massawa, Eritrea, July 22. This was our destination, so far as the ocean part of our voyage was concerned.

Massawa is considered one of the hottest seaports in the world. During the summer months the temperature ranges from 130° to 140° F., with the humidity almost ringing the bell. A good number of us had to spend the night aboard ship due to lack of transportation to the base, which was about 90 miles back in the mountains. The following morning we were transported to the base via truck. This took about five hours because all of it was uphill.

#### The Barracks Weren't Ready

We were rather surprised to find that we were not expected until the following month, and the barracks which we were to occupy were far from completed. However, we were given sleeping quarters in a new building which eventually would be part of the hospital. This building had no windows or doors, so we were practically without protection from the weather.

The time of our arrival was shortly

(Concluded on Page 23, Column 1)

Address before the Fifth Annual Canadian Refrigeration Conference.

**Artic**  
(DU PONT METHYL CHLORIDE)

**SERVICE NEWS**

**WAR-TIME NEWS LETTER**

Dear Sir:

In making replacements with Methyl Chloride of refrigerants no longer available ... there are several important details which should not be overlooked.

Be sure that all of the old refrigerant is drawn off from the system ... that the system is thoroughly clean and dry before putting in the Methyl Chloride.

Remember that Methyl Chloride per unit of volume weighs less than most refrigerants ... that 7 lbs. of Methyl has about the same volume as 10 lbs. of "Freon" 12.

Control orifices such as capillary tubes should be made smaller to accommodate the lower viscosity of Methyl Chloride ... the lower resistance to flow through pipes.

Speed up the compressor - 5 to 10% - if equipment construction will permit. This is necessary to handle the increased volume of vapor. Power consumption won't be greater even with the speed-up because required HP/ton of refrigeration is slightly less with Methyl Chloride than with "Freon" 12 or sulfur dioxide.

Check every replacement job to be sure that it conforms with American Standard Association Safety Code.

If you have any doubts about whether a particular design can use Methyl Chloride, get in touch with the manufacturer ... ask for his recommendations and procedure.

Very truly yours,

*Thomas Coyle*  
THOMAS COYLE  
Manager, Chlorine Products Division  
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

**REFRIGERATION**

**Copper TUBING**

**SUPERIOR** brand copper tubing for refrigeration is dry annealed, dehydrated, bright as gold and smooth as glass inside and outside. It bends easily—has uniform wall thickness. It is made to A. S. T. M. Specifications B68-33 in exact 50 and 100 ft. coils—machine wrapped in moisture-proof crepe paper—ends closed and sealed. All sizes stocked.

**PENN BRASS & COPPER CO., INC.**  
ERIE, PA. U.S.A.

## Big Cold Storage Plant Is Built, But There's No Power to Run It

(Concluded from Page 22, Column 5) after the beginning of their rainy season, which starts around the middle of June and lasts until about the middle of September. During this time, they have an average rainfall of between 40 and 45 inches. This certainly puts California in the shade with their reported seven inches.

We thought we had a long drawn out trip from the States, but found out later that some of the men at this base had been enroute for 105 days, with accommodations even worse than ours.

We were given three days to get organized before starting work. But, unfortunately, when we reported for work we were informed that all of our maintenance equipment had been lost near Madagascar about a month previous to our arrival. We did, however, have four refrigerated semi-trailers to keep defrosted and operating; also about 12 compressors located in PX and the mess hall, which required the usual amount of attention.

### Italians Hide Compressor Parts

There were two 5 x 5 double Italian ammonia compressors that had been operating on a small ice making plant and two cold storage rooms. Before surrendering to the British, the Italians had dismantled the compressors and hidden the parts in the hills. They also had dismantled some of the large Diesel engines that operated the generators in the power plant.

At this time the Italians, who were prisoners of war but were actually working for Douglas, thought that Rommel and his "crack troops" were coming on right through and would soon rescue them and bring the base back under Axis control in the very near future. Consequently, these Italian workers really turned out some work for a while, because they thought they were building the base for Italy and the Axis at America's expense.

For a package of cigarettes or so, they could be bribed to return parts for the Diesel engines and the compressors. All of the compressor parts were finally retrieved; however, a few of the Diesel engine parts still were missing and had to be made in the machine shop.

All of the buildings that were left standing during the invasion were pretty well riddled with machine gun bullets, most of which were constructed of sheet metal. Conservatively, 50% of the concrete buildings were completely demolished.

### Eritreans Are Unusual

The Eritreans are an unusual race. They are very small in stature, probably because they are vegetarians and do not eat what we call "wholesome, body-building foods." Their diet consists mostly of grain, cooked into a mush and placed in the sun to dry. Their beverage is a tea, after a fashion, which is imported from Arabia.

Sanitation is unknown to them, and certainly unpracticed by them. Their homes consist of a sort of a cave carved out of the side of a mountain. Their goats and sheep are

permitted to roam in and out of their huts at will. One need only to imagine the odor resulting therefrom.

The women use a rancid oil taken from goat's milk on their hair. There was a saying among the men at the camp that you could smell a native woman coming two or three blocks away, even in pitch dark.

### Loaned to Contractor

About six weeks after our arrival, the other two refrigeration men and I were loaned to the contractor who was erecting a cold storage building. We were to install the refrigerating equipment. The building was a one story structure 250 feet long and 150 feet wide, divided into four compartments for meat storage, low temperature for frozen foods, dairy products and vegetables. An anteroom ran the full length of the building on either side. Completely surrounding the building was a loading platform.

Cooling was done by 14 brine spray units—two for each anteroom, two for the meat storage room, four for the low temperature room, two for the dairy room and two for the vegetable room.

Four 25-hp. Brunner condensing units, used in conjunction with two evaporative condensers, supplied the refrigeration. The compressor room was located at the north end of the building. On one side of this room was an egg candling station, and on the other side was an office for commissary personnel.

### This Job Took 30 Days

The compressors were installed in pairs and inter-connected and valved, so as to permit operation of either pair on the rooms. We were about 30 days completing the installation, because there was a shortage of tubing and fittings. Some of the fittings had to be made in a local machine shop, and the tubing had to be located at other bases and flown in or brought in the quickest way possible. This made us quite appreciative of the conveniences we enjoy here in America.

The disappointing part of the installation was that after completion we were unable to operate it because of a lack of power. Tied in with the lack of power, however, was the lack of produce to be stored in the refrigerator, since about as fast as it was received, it was consumed. So you can imagine how we felt after spending all that time and effort making the installation, not to be able to start it and see it operate.

### Recreation Plentiful

Recreation of all kinds was plentiful. Movies, pool, baseball, soccer and boxing matches one night each week. The movies and boxing matches were the most popular. The comedy of the boxing matches was very good, because boxing gloves were put on six Sudanese who were turned loose in the ring for a free-for-all. The last man standing was the winner. The matches put on between the English and American soldiers were quite evenly won. We had one Douglas man who apparently was the champion,

although we often considered his fighting to be quite dirty. He nevertheless won all of his matches either by a knock-out or by a technical knock-out.

Asmara, the capital of Eritrea, is about 40 miles from the base. Buses run back and forth on regular schedule. On days off duty, we usually spent our spare time in town, although there was very little more activity in Asmara than at the base.

During the winter months the climate was far from being healthy, because the base was located between 6,000 and 6,500 feet above sea level. The equivalent of all four yearly seasons was experienced each 24 hours. I personally checked the temperature and found it to vary as much as 50° between midnight and noon. Coupled with this varying degree in temperature was the very high relative humidity. Our bedding and clothing was always damp. In December I was hospitalized with pneumonia and thus was withdrawn from active duty.

When the British finally got Rommel in hand and sent him scurrying back in the opposite direction, it became apparent that this base would probably be of no use to the war effort, and therefore many of the men were transferred to different bases in the Near East and others were given the choice of returning to the States. I chose the latter.

We sailed from Massawa Feb. 18, stopping at Bombay, India; Cape Town, South Africa; Firth of Clyde, Scotland; and arrived at Staten Island, New York, April 9, 1943—50 days later. Believe me, it was awful good to get back home!



## OFFERS the MOST for THIRST RELIEF

An OASIS ELECTRIC WATER COOLER stands out like a palm-tree oasis on the desert as the most welcome sight wherever thirst is encountered. That's because Oasis coolers are ready instantly—24 hours a day—to deliver fresh, clear, healthfully cooled water in the most sanitary, easy-to-drink flow possible. They provide thirst-relief at its best—and at low cost.

Dependable performance, perfected and proved through EBCO's 20 years of leadership in water cooler design and construction, is the key to the growing preference for OASIS coolers. They are produced in one of the most modern, fully equipped plants of its kind. Write for details.

**EBCO MANUFACTURING COMPANY**  
401 W. Town St., Columbus 8, Ohio



## DESIGN YOUR POSTWAR CASES WITH

*Thermopane*  
THE INSULATING GLASS THAT SELLS WITH CLEAR VISION!



Due to new and improved methods of keeping frozen and refrigerated packaged foods of all kinds, postwar cases will get a bigger play than ever before. Cases equipped with clear-vision, non-fog doors and windows will get the biggest play.

THERMOPANE... the ideal glass unit for cases... is not new to the refrigeration field. It is a multiple-glass sandwich which provides both perfected insulation and complete visibility. Case manufacturers using THERMOPANE eliminate these costly problems:

(1) High manufacturing costs in attempting to get

better insulation by installing several separate panes of glass; (2) Frequent service calls because of fogged-up cases, and (3) Smudged and dirty inner glass surfaces due to infiltration of foreign matter.

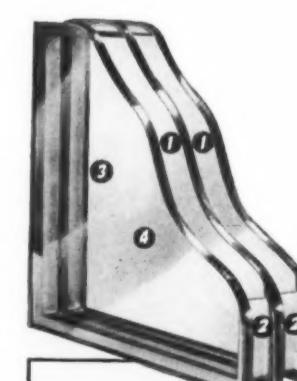
When the wartime demand ceases, Libbey-Owens-Ford will resume civilian THERMOPANE production in an even greater variety of sizes and thicknesses. In your postwar planning, specify this Clear-Vision-Faster-Selling glass.

Libbey-Owens-Ford Glass Company, 6044 Nicholas Building, Toledo 3, Ohio.

## 4 IMPORTANT THERMOPANE FEATURES

- 1 **INSULATING AIR SPACE.** The air inside the Thermopane unit is scientifically cleaned, dried and hermetically sealed. This layer of air gives Thermopane its high insulating efficiency.
- 2 **BONDERMETIC SEAL.** This patented metal-to-glass seal permanently bonds the two or more panes of glass into a single unit. Amazingly strong, it seals the insulating layer of air against dirt and moisture.
- 3 **NO FOGGING UP.** Because of the patented Bondermetic Seal and the insulation afforded by the sealed-in air space, frosting up and condensation are eliminated on the inner surfaces.
- 4 **ONLY TWO SURFACES TO CLEAN.** The inner surfaces of Thermopane are specially cleaned at the factory—and always stay clean.

Copyright 1944, Libbey-Owens-Ford Glass Co.

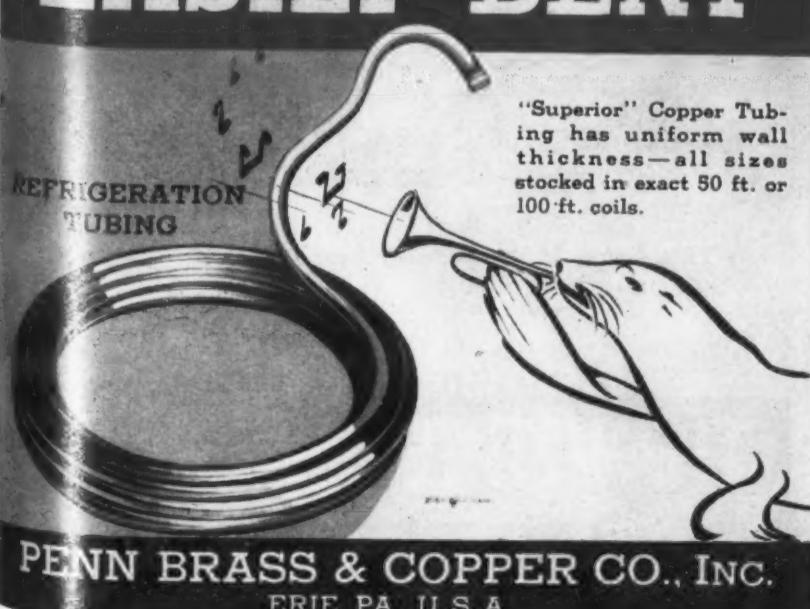


**LIBBEY-OWENS-FORD**  
a Great Name in GLASS



Trade Marks Registered

## EASILY BENT



## Training Institute Starts Civilian Class

BLOOMINGTON, Ill.—Commercial Trades Institute, which has been conducting a course in refrigeration installation, service, and maintenance for the Army here, has started a course for civilians and is now offering training through an extension course.

The first civilian class at the school is made up of post mechanics from the 6th Service Command area, and is being given at the instigation, and under the direction, of Mr. C. J. Freestone, chief engineer of the Repair and Utilities Division of the 6th Service Command.

To facilitate handling of extension instructions on a nation-wide basis, the Institute says it plans to establish training centers in various cities. Actual shop training is intended to supplement lessons by mail.

## Cutler-Hammer Opens Office In Columbus

COLUMBUS, Ohio—Cutler-Hammer, Inc., announce the establishment of a sales office in Columbus, Ohio. The new office is located in the Chamber of Commerce Bldg.

Russell D. Yoder will be the sales engineer in charge of this new office. Trained at Milwaukee headquarters, Mr. Yoder completed the company's student engineer course after which he worked in the engineering and resale sales departments. In 1941 he went to Cincinnati district office where he worked as estimator, application engineer, and sales engineer before establishing the Columbus office.

For the present, the Columbus office will operate as a branch of the Cincinnati district sales office of which E. C. Bolton is district manager.

## THE REFRIGERANT GAS LEAK HUNTERS



**LENK** HALIDE LEAK DETECTOR  
MANUFACTURING CO.  
NEWTON LOWER FALLS 62, MASS.  
Manufacturers of Soldering Equipment Since 1919  
ADDRESS: POST OFFICE BOX 8-A

You can't afford to waste Freon and other precious refrigerant gasses available only for Government specified use.  
LENK Halide Leak Detector saves gasses, manpower, time and money through swift and positive action. LENK Halide Leak Detector features flame control, shut-off valve, self-cleaning orifice, non-clogging burner. Write for Priority Information and Catalog!



You can't afford delay in locating refrigerant gas leaks.

## Complaints, Adjustments

### Leaks

**Cause 1:** A crack or loose joint allows refrigerant to leak from machine.

### CORRECTION

1. Verify leak and locate it if possible.

a. A leak is easily detected in the majority of refrigerating machines since they have sulphur dioxide ( $SO_2$ ) as refrigerant. Its odor makes itself apparent even when present in very small quantities. To locate a leak, use an uncorked bottle of concentrated ammonia or a swab saturated with it. Reaction of sulphur dioxide gas and ammonia fumes produces a white vapor which is easily recognized.

b. A leak in CA machines charged with Methyl-Formate will seldom be

**Editor's Note:** This is the seventh of a series of articles describing the servicing of General Electric Co.'s refrigerators, which is being published in *Air Conditioning & Refrigeration News*.

recognized for two reasons: (1) leak will probably be inward because pressure within machine is below atmospheric pressure under most conditions and (2) Methyl-Formate is practically odorless even though an outward leak should occur. A leak in CA machines usually will appear as non-condensable gas collecting in the float valve.

It must be recognized that presence of non-condensable gas does not necessarily mean that machine has an

external leak. However, if a CA machine fails to refrigerate because of non-condensable gas and is completely bled several times, then fails again within a short time due to non-condensable gas, in all probability it has a leak.

c. A leak in a machine charged with "Freon-12" can be detected by using a Halide torch.

d. It is possible to test for leaks in all machines except Type CA by using soap bubbles. A mixture of soap and water can be spread over joints and if a leak is present, bubbles will be blown in solution.

2. Tighten purging screw on float valve.

3. Replace Sealed machines if leak not caused by loose purging screw.

4. Tighten flared joints on Open-type machines.

5. Tighten shaft seal clamping plate on Open-type machines.

6. Replace shaft seal on Open-type machine if it leaks.

7. Repair leak or replace necessary part on Open-type machines.

This usually requires discharging refrigerant, making repair or replacement, bleeding air, and then adding refrigerant. It is essentially a shop procedure. Remove machine from cabinet and return to shop. Refer to detailed manuals for instruction.

## General Service Procedures

### Purging Refrigerant

1. Move refrigerator to open air.

When refrigerator is in an enclosed area or cannot be moved to open air, purging can be done into a lye and water solution or a washing soda and water solution. Instructions for purging in this manner are given in the detailed service manuals.

2. Open float-valve purging screw just a crack.

On Open-type machines with service valves, gauge connection of discharge service valve can be opened for purging, if desired.

3. Purge a minute or less depending upon symptoms.

There is no definite method of determining how long to purge nor how much refrigerant to remove.

4. Close purging screw and fill screw socket with oil to test for a leak.

5. Observe machine operation.

Machine may require operation for several hours before effects of purging will be noticeable. After a period of time has elapsed, if suction line still frosts, more refrigerant should be purged.

## WPB Simplifies Rules On Large Stokers

WASHINGTON, D. C.—Simplification of restrictions controlling distribution of Class A coal stokers, the type required to heat large buildings, was announced March 28 by the War Production Board.

Sales of these stokers to fill orders for the Army and Navy and for approved installation in projects authorized by preference ratings regularly assigned to war housing and other construction projects may now be made without specific authorization from WPB.

All other sales must still be authorized on Form WPB-1319, and applications for such authorization must be filed with the appropriate WPB field office.

Approval on Form WPB-1319 will also constitute authority to begin construction if the total cost—stoker plus installation—is no more than \$5,000. If the total cost exceeds \$5,000, however, applicants should apply for authorization to purchase and install a Class A stoker on regular construction application forms GA-1456 or WPB-2896.

Previously, every would-be purchaser of Class A stokers had to obtain special authorization from the War Production Board before purchase could be made.

Order L-75, "Coal Stokers," was amended on March 24, to make the above changes in distribution restrictions.

The amended order also specifies that any appeals from the provisions of the order should be filed on Form WPB-1477 (formerly PD-500) with WPB field offices.

Manufacturers' production and delivery reporting requirements, which had become obsolete, were deleted from the order by the amendment.

Production of Class B, domestic type stokers, is still prohibited, WPB pointed out.

## Dayton Rubber Issues New V-belt Catalog

DAYTON, Ohio—Catalog No. 280, describing its line of v-belt drives, has been issued by Dayton Rubber Mfg. Co. here.

To facilitate use of the catalog, the v-belt data is grouped under five classifications, each section being printed on a different color paper. First section is devoted to v-belt drives for standard motor speeds; the second, to v-flat drives, both being featured by drive selection tables.

Supplementary drive tables containing data on speed-up v-belt drives for standard motor speeds, gas and Diesel engines, jackshafts, etc. are in the third section of the catalog. Engineering data for special drives features the fourth section, and fifth section lists sizes and prices and includes interchangeability data.

*"A Little Goes a Long Way!"*

### THIS MUCH THAWZONE (BY WEIGHT)

1 to 150

(in hermetic units 1 to 300)

To the engineer who knows his refrigerating plants, the above is a graphic way of illustrating one of THAWZONE'S important features.

### FOR THIS MUCH REFRIGERANT (BY WEIGHT)

The 1-oz. bottle treats \*8 lbs. of refrigerant, \$ 1.00  
The 4-oz. bottle treats \*32 lbs. of refrigerant, \$ 3.60  
The pint bottle treats \*128 lbs. of refrigerant, \$10.00

\*This figure is doubled for hermetic units. See how little it costs to use.

A TINY AMOUNT → A BIG JOB ← SMALL COST

## THAWZONE

Fully Patented by U. S. Patent  
The PIONEER FLUID DEHYDRANT

HIGHSIDE CHEMICALS CO.  
195 Verona Ave.  
NEWARK 4, N. J.

## The TORPEDO that smashed old ideas of Dehydrator design . . .

● When the Imperial Torpedo Dehydrator was announced in 1940, it introduced an entirely new conception of dehydrator design and dehydrator efficiency.

It pioneered the one piece streamlined shell (from which it took its name "Torpedo"). This design offers such marked advantages as greater strength, easier passage of refrigerant and fewer joints.

And it introduced the finger-type outlet screen which provides more efficient filtering, less chance of clogging and easier removal for cleaning and refilling.

Sectional view above evidences its leadership in design and shows why it has won widespread preference in the industry.

THE IMPERIAL BRASS MFG. CO., 565 So. Racine Ave., Chicago 7, Ill.

## IMPERIAL Refrigeration and Air Conditioning Products

FITTINGS • VALVES • DEHYDRATORS • FILTERS • FLOATS • CHARGING LINES  
TOOLS FOR CUTTING, FLARING, BENDING, COILING, PINCH-OFF AND SWEDGING

## Factors In the Application of Dryers and Strainers In Refrigeration Installations

By G. Wilson, Henry Valve Co.\*

In discussing "dryers and strainers and their application," I shall handle these two accessories separately; dryers first because they are a widely discussed topic.

There are several points to be considered in their use in a refrigeration system, particularly as to choice of dehydrant, capacity ratings, etc., but primarily the removal of moisture from the system thereby eliminating the cause of freeze ups. It is sometimes a tedious job to locate the source of trouble as it may be in one of several places.

A dryer of ample capacity, and there should be no skimping here, installed correctly, will extend long, uninterrupted service. In estimating dryer capacity to be used in rough calculations, 12 to 15 cubic inches per horsepower should fairly keep one out of trouble provided of course that not any excessive amount of moisture has been introduced into the system.

If such a condition exists, it is advisable to use an oversize temporary service dryer for at least 24 hours of operation prior to installation of the permanent dryer.

Water is known to combine with certain refrigerants, forming an acid. An example of this is sulphur dioxide combining chemically with water, forming sulphurous acid which will attack the metal parts of the system. Other refrigerants are also known to combine with water. Methyl chloride has been known to produce dilute hydrochloric acid when improperly handled. Ethyl chloride and "Freon" have the same tendency. Here again a cause for breakdown or failure is eliminated by the use of the proper dryer. If this condition should develop in a system, corrosion will in all probability take its toll.

Very violent corrosion will result from an acid or salt setting up a low voltage cell when in contact with unlike metals. This is similar to or can be compared with the common flashlight battery. The reaction is known as galvanic or electrolytic.

\*Address before the Fifth Annual Canadian Refrigeration Conference.

would be only one-third the area of the pipe. Naturally, there would be a substantial pressure drop if this occurred.

Wherever warranted, a cleanable strainer should be used. They simplify the maintenance of any system and enable the service man to do a more efficient job.

There are still other classes of strainers which are truly filters. They employ the use of fabric such as felt or some other dense matting. They are efficient, but do create a pressure drop which is variable with material used.

Therefore, in strainers, as in dryers, precaution should be taken to see that the unit has the proper capacity and wire cloth mesh to adequately handle the particular application in which it is installed.

### Lt. Col. Glasser Returns To Civilian Life

BROOKLINE, Mass.—Lieut. Col. Harold A. Glasser, formerly appliance sales manager of Bruno-New York, Inc. and inventor of the "Conservador" used in Philco refrigerators, has been placed on the inactive list of the armed forces.

He had been stationed at the Boston Port of Embarkation since shortly after he was commissioned as a major in July, 1942. He received his promotion to lieutenant colonel in May, 1943.

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# Task Committee Report on Refrigeration Requirements In Places Handling Food

## Data on Equipment In All Types and Sizes of Food Processing Concerns

### Milk, Dairy Products, And Ice Cream

Plants under this classification were treated under several different sub-classifications as follows:

- (a) Condensed milk plants.
- (b) Evaporated milk plants.
- (c) Dried milk plants.
- (d) Cheese plants.
- (e) Butter plants.
- (f) Special dairy product plants.
- (g) Ice cream plants.
- (h) Fluid milk plants.
- (i) Fluid milk feeder stations.

Each of these sub-classifications was treated separately in accordance with the following:

#### (a) CONDENSED MILK PLANTS

Statistics furnished the War Food Administration by Mr. Ralph Copp of the Department of Agriculture, which figures are based on the 1942 Census of Manufactures, reveal 133 condensed milk plants having an average capacity of 10,000 lbs. of raw milk per hour.

The typical average 10,000 lb. per hour plant has a requirement of 20°

F. initial cooling and 20° F. final cooling, and hence a load equivalent of 23 tons of refrigeration. This will necessitate the following refrigeration equipment or equivalent thereof:

1-6½ x 6½ inch single-acting vertical double-cylinder ammonia compressor.

1-30-hp. electric motor and starter.

1-Horizontal shell-and-tube ammonia condenser.

1-Ammonia receiver.

Necessary ammonia valves, fittings, pipe and connections.

Necessary water valves, fittings, pipe and connections.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and installed basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment is \$4,576 per plant, or \$608,750 for the total 133 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

#### (b) EVAPORATED MILK PLANTS

Statistics furnished the War Food

Administration by Mr. Copp, which figures are based on the 1942 Census of Manufactures, reveal 175 evaporated milk plants having an average capacity of 20,000 lbs. of raw milk per hour.

The typical average 20,000 lb. per hour plant has a requirement of 20° F. cooling and a load equivalent of 47 tons refrigeration. This will necessitate the following refrigeration equipment or equivalent thereof:

1-7½ x 7½ inch single-acting vertical double-cylinder ammonia compressor.

1-60-hp. electric motor and starter.

1-Horizontal shell-and-tube ammonia condenser.

1-Ammonia receiver.

Necessary ammonia valves, fittings, pipe and connections.

Necessary water valves, fittings, pipe and connections.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and installed basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment is \$6,476 per plant, or \$1,132,500 for the total 175 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

**Editor's Note:** This is another part of the report by the Task Committee of the General Refrigeration Industry Advisory Committee on requirements for domestic civilian food processing, preservation, and storage.

Parts of the report being published in the NEWS are those showing the number of establishments utilizing refrigerating equipment by various branches of the food handling fields; type and extent of equipment in such establishments; overall value; and the estimated life and normal replacement rate.

The Task Committee of the General Advisory Committee which carried out the job of compiling the report was comprised of M. G. Munce, York Corp.; F. H. Faust, General Electric Co.; and T. S. Pendergast, Universal Cooler Corp.

#### (c) DRIED MILK PLANTS

Statistics furnished the War Food Administration by Mr. Copp, which figures are based on the 1942 Census of Manufactures, reveal 185 spray-type and 435 roller-type dried milk plants. It has been assumed by the Committee that the discrepancy between these figures is due to the inclusion of plants not utilizing refrigeration equipment.

The typical cheese plant necessitates the following equipment or equivalent thereof:

1-6½ x 6½ inch single-acting vertical double-cylinder ammonia compressor.

1-40-hp. electric motor and starter.

1-Horizontal shell-and-tube ammonia condenser.

1-Ammonia receiver.

Necessary ammonia valves, fittings, pipe and connections.

Necessary water valves, fittings, pipe and connections.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment is \$4,279 per plant, or \$10,512,500 for the total 2,457 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

#### (d) CHEESE PLANTS

Statistics furnished the War Food Administration by Mr. Copp, which figures are based on the 1939 Census of Manufactures, reveal 3,506 creamy butter plants of all sizes. Statistics furnished the War Food Administration by Mr. Copp, which figures are based on the 1942 Census of Manufactures, reveal 4,607 butter plants, of which 1,979 are smaller plants and 2,628 are larger plants.

Further conference revealed that the smaller butter plants necessitate the following refrigeration equipment or equivalent thereof:

1-3 x 3 inch double-cylinder ammonia self-contained condensing unit.

1-5-hp. electric motor and starter.

1-Room space chiller with fractional hp. fan motor.

Necessary ammonia valves, fittings, pipe and connections.

Necessary water valves, fittings, pipe and connections.

Similarly, the larger butter plants necessitate the following refrigeration equipment or equivalent thereof:

1-5 x 5 inch double-cylinder ammonia self-contained condensing unit.

(Continued on Page 27, Column 1)

#### (e) BUTTER PLANTS

Statistics furnished the War Food Administration by Mr. Copp, which figures are based on the 1939 Census of Manufactures, reveal 3,506 creamy butter plants of all sizes. Statistics furnished the War Food Administration by Mr. Copp, which figures are based on the 1942 Census of Manufactures, reveal 4,607 butter plants, of which 1,979 are smaller plants and 2,628 are larger plants.

Further conference revealed that the smaller butter plants necessitate the following refrigeration equipment or equivalent thereof:

1-3 x 3 inch double-cylinder ammonia self-contained condensing unit.

1-5-hp. electric motor and starter.

1-Room space chiller with fractional hp. fan motor.

Necessary ammonia valves, fittings, pipe and connections.

Necessary water valves, fittings, pipe and connections.

Similarly, the larger butter plants necessitate the following refrigeration equipment or equivalent thereof:

1-5 x 5 inch double-cylinder ammonia self-contained condensing unit.

(Continued on Page 27, Column 1)

#### (f) ICE

Statistics furnished the War Food Administration by Mr. Copp, which figures are based on the 1939 Census of Manufactures, reveal 12,000 ice cream plants. Statistics furnished the War Food Administration by Mr. Copp, which figures are based on the 1942 Census of Manufactures, reveal 14,288 ice cream plants.

Further conference revealed that the smaller ice cream plants necessitate the following refrigeration equipment or equivalent thereof:

1-200-hp. electric motor and starter.

## Refrigeration Requirements For Food Processing Plants

(Continued from Page 26, Column 5)

monia self-contained condensing unit.  
1-20-hp. electric motor and starter.  
1-3 x 3 inch single-cylinder ammonia self-contained condensing unit.  
1-3-hp. electric motor and starter.

1-Air unit of the blower type with controls and 1½-hp. fan motor.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment outlined above for the smaller plant is \$1,544 per plant, and for the larger plant \$4,368 per plant, or a total of \$14,532,500 for the total 4,607 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

### (f) SPECIAL DAIRY PRODUCT PLANTS

Statistics furnished the War Food Administration by Mr. Copp, which figures are based on the 1939 Census of Manufactures, reveal that there are 51 plants in this category. It is not entirely clear exactly what type of plant is included under this statistical classification, and the Department of Agriculture has no further figures to amplify the Census figures.

From experience the Committee has determined that the typical average special dairy product plant necessitates the following refrigeration equipment or equivalent thereof:

1-4 x 4 inch double-cylinder self-contained ammonia condensing unit.  
1-10-hp. electric motor and starter.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment is \$1,756 per plant, or \$90,000 for the total 51 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

### (g) ICE CREAM PLANTS

Statistics furnished by the Committee by the War Food Administration, which figures are based on the 1939 Census of Manufactures, reveal 2,734 plants in this classification. Statistics obtained from Dr. S. B. Mortenson and Mr. Copp, reveal 4,010 ice cream plants, subdivided as follows:

128 larger plants.

568 medium-sized plants.

3,314 smaller plants. Since the latter figures (obtained from Mr. Copp) conform closely to information obtained from private sources, the Committee determined to utilize Mr. Copp's figures.

The typical average larger ice cream plant has a requirement of 12,000 gallons per day and necessitates the following refrigeration equipment or equivalent thereof:

2-10 x 10 inch single-acting vertical double-cylinder ammonia compressors.

2-125-hp. electric motors and starters and motor generator sets.

1-10 x 10 inch single-acting vertical four-cylinder ammonia compressor.

1-200-hp. electric motor with starter and motor generator set.

3-Vertical shell-and-tube ammonia condensers.

1-Ammonia receiver.

2-Low pressure type ammonia traps.

3-Liquid ammonia recirculating pumps with motors.

64,000 ft.-2 inch room coils with controls.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

The typical average medium-sized ice cream plant has a requirement of 2,000 gallons per day and necessitates the following refrigeration equipment or equivalent thereof:

1-6½ x 6½ inch single-acting vertical double-cylinder ammonia compressor.

1-50-hp. electric motor and starter.

1-Horizontal ammonia condenser.

1-Ammonia receiver.

2-Low pressure type traps with controls.

12,300 feet-2 inch ammonia room coils.

2-Liquid recirculating pumps with motors.

1-400 dozen per hour popsicle tank.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

The typical average smaller ice cream plant has a requirement of 300 gallons per day and necessitates the following refrigeration equipment or equivalent thereof:

1-5 x 5 inch double-cylinder self-contained ammonia condensing unit.

1-20-hp. electric motor and starter.

2-Low pressure type traps with controls.

1,000 feet-2 inch ammonia room coils.

690 feet-1½ inch ammonia room coils.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

Such equipment as outlined above, for larger, medium, and smaller ice cream plants, is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for the typical average larger plant is \$93,772 per plant, for the medium-size plant outlined above \$27,554 per plant, and for the smaller plant outlined above \$4,540 per plant, or a total of \$42,700,000 for the total 4,010 plants.

The average life of such plants is estimated at 12½ years and the normal replacement rate at 8%.

### (h) FLUID MILK PLANTS

Statistics furnished the Committee by Dr. S. B. Mortenson and Mr. Copp, which figures are based on the 1942 Census of Manufactures, reveal 39,621 fluid milk plants, subdivided as follows:

128 larger plants.

568 medium-sized plants.

3,314 smaller plants. Since the latter figures (obtained from Mr. Copp) conform closely to information obtained from private sources, the Committee determined to utilize Mr. Copp's figures.

The typical average larger ice cream plant has a requirement of 12,000 gallons per day and necessitates the following refrigeration equipment or equivalent thereof:

2-10 x 10 inch single-acting vertical double-cylinder ammonia compressors.

2-125-hp. electric motors and starters and motor generator sets.

1-10 x 10 inch single-acting vertical four-cylinder ammonia compressor.

1-200-hp. electric motor with starter and motor generator set.

3-Vertical shell-and-tube ammonia condensers.

1-Ammonia receiver.

2-Low pressure type ammonia traps.

37,166 smaller plants.  
2,167 medium plants.  
288 larger plants.

The typical average smaller fluid milk plant has a requirement of two routes of 300 quarts of milk average per day and necessitates the following refrigeration equipment or equivalent thereof:

1-3 x 3 inch double-cylinder self-contained ammonia condensing unit.

1-5-hp. electric motor and starter.

1-Room space chiller with fractional hp. fan motor.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

The typical average medium-size fluid milk plant has a requirement of 350 gallons per hour and necessitates the following refrigeration equipment or equivalent thereof:

1-5 x 5 inch double-cylinder self-contained ammonia condensing unit.

1-20-hp. electric motor and starter.

1-Set of controls for direct expansion type milk cooler.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

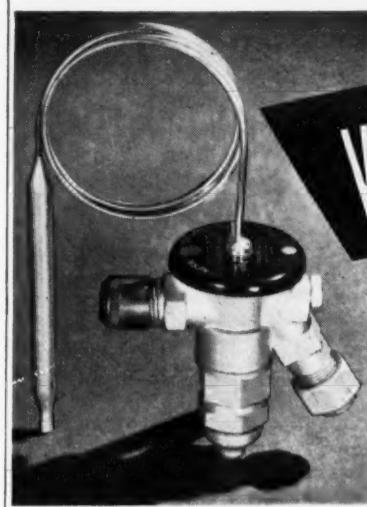
The typical average larger fluid milk plant has a requirement of 1,150 gallons per hour and necessitates the following refrigeration equipment or equivalent thereof:

1-6½ x 6½ inch single-acting vertical double-cylinder ammonia compressor.

1-30-hp. electric motor and starter.

2-5 x 5 inch single-acting vertical double-cylinder ammonia compressors.

(Continued on Page 28, Column 1)



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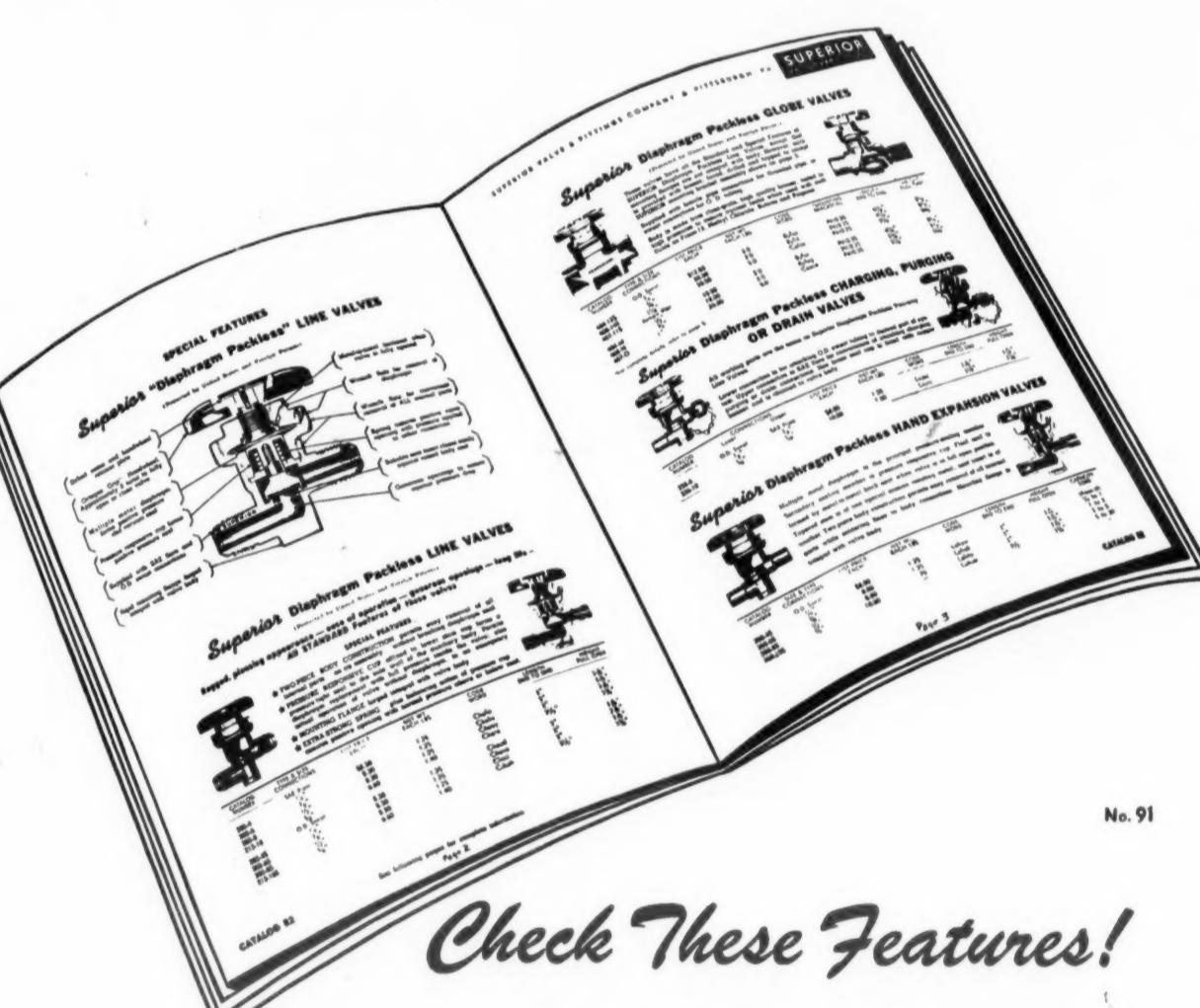
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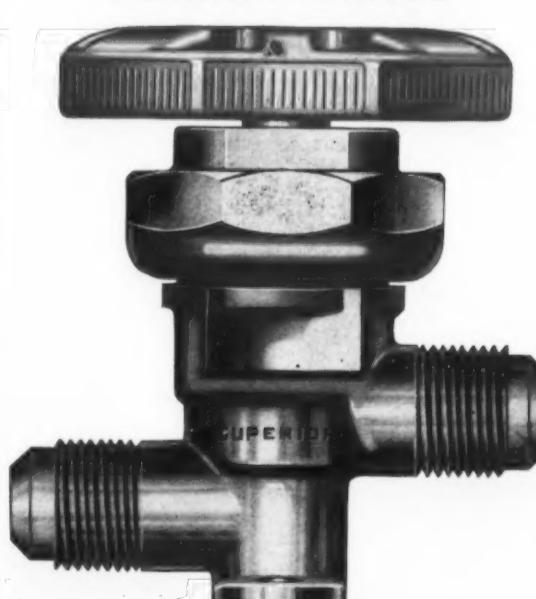
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## Equipment Requirements For Meat and Poultry Packing Plants

(Continued from Page 27, Column 3)

2—20-hp. electric motors and starters.

2—Evaporative type condensers with fan motors and starters.

1—Ammonia receiver.

1—Set of float controls.

4—Room air coolers with float controls and fan motors with starters.

1—Water cooling tank with ammonia coils and controls.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

Such equipment as outlined above for small, medium, and large fluid milk plants is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for the equipment outlined above for the smaller fluid milk plant is \$1,544 per plant, for the medium-size fluid milk plant is \$4,300 per plant, and for the larger fluid milk plant is \$20,515, or a total of \$72,598,750 for the total 39,621 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

### (i) FLUID MILK FEEDER STATIONS

Statistics furnished the Committee by Dr. S. B. Mortenson and Mr. Copp reveal 997 fluid milk feeder stations

having a requirement necessitating the following refrigeration equipment or equivalent thereof:

1—7½ x 7½ inch single-acting vertical double-cylinder ammonia compressor.

1—60-hp. electric motor with starter.

1—Horizontal shell-and-tube type ammonia condenser.

1—Ammonia receiver.

1—Suction trap with controls for direct expansion milk cooler.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

Such equipment as outlined above is customarily sold to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment is \$5,958 per plant, or \$5,938,750 for the total 997 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

## (2). Meat Packing, Sausage, etc.

Plants under this classification were treated under subclassifications as follows:

(a) Meat packing and custom slaughtering plants.

(b) Sausage, prepared meats, etc. The treatment given each of the above classifications was in accordance with the following:

### (a) MEAT PACKING AND CUSTOM SLAUGHTERING PLANTS

Statistics furnished the Committee by the War Food Administration, which figures are based on the 1939 Census of Manufactures, reveal 1,478 meat packing plants and 40 custom slaughtering plants. It was determined to disregard the custom slaughtering plants on the assumption that the total refrigerating equipment installed was a negligible quantity in comparison with that installed in meat packing plants.

A further study revealed that the 1,478 meat packing plants could be subclassified as follows:

1,371 small meat packing plants.

86 medium-size meat packing plants.

21 large meat packing plants.

The typical average small meat packing plant has a requirement of slaughtering 40 hogs, 20 cattle, 5 calves, and 15 lambs per day and necessitates the following refrigeration equipment or equivalent thereof:

1—7½ x 7½ inch single-acting vertical double-cylinder ammonia compressor.

1—60-hp. electric motor and starter.

1—Horizontal shell-and-tube type ammonia condenser.

1—Ammonia receiver.

12,500 feet—2 inch room coils with controls.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

The typical average medium-size meat packing plant has a requirement of slaughtering 800 hogs, 150 cattle,

30 calves, and 90 lambs per day and necessitates the following refrigeration equipment or equivalent thereof:

2—10 x 10 inch single-acting vertical four-cylinder ammonia compressors.

2—200-hp. electric motors with starters and motor generator sets.

2—Vertical shell-and-tube type ammonia condensers.

1—Ammonia receiver.

1—Brine cooling tank, complete with coils and control.

6—Blower type air cooling units with controls, fan motors and starters.

100,000 lin. ft.—2 inch room coils with controls.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$15,000 per plant, or a total of \$16,005,000 for the total 1,067 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

The typical average plant under this classification has a requirement necessitating the following refrigeration equipment or equivalent thereof:

1—7½ x 7½ inch single-acting vertical double-cylinder ammonia compressor.

1—60-hp. electric motor and starter.

1—Horizontal shell-and-tube type ammonia condenser.

1—Ammonia receiver.

12,500 lin. ft.—2 inch room coils with controls.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$15,000 per plant, or a total of \$16,005,000 for the total 1,067 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

## (3) Eggs and Poultry

Statistics furnished the Committee by the War Food Administration, which figures are based on the 1939 Census of Manufactures, reveal 785 poultry dressing and packing plants. No statistics were available regarding egg plants, although it is recognized there are many such plants in existence.

Plants under this classification were customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$15,000 per plant, or a total of \$16,005,000 for the total 1,067 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

### (a) EGG PLANTS

In the absence of any authentic statistics, the Committee estimated there are 500 egg plants in operation, the typical average plant necessitating the following refrigerating equipment or equivalent thereof:

1—5 x 5 inch double-cylinder self-contained ammonia condensing unit.

1—20-hp. electric motor with starter.

2—Room cooling air units with controls, fan motors and starters.

2,500 lin. ft.—2 inch room coils with controls.

Necessary ammonia valves, fittings, pipe, and connections.

Necessary water valves, fittings, pipe, and connections.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$15,000 per plant, or a total of \$16,005,000 for the total 1,067 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

### (b) SAUSAGE, PREPARED MEATS, ETC.

Statistics furnished the Committee by the War Food Administration, which figures are based on the 1939 Census of Manufactures, reveal 1,067 sausage and prepared meat plants producing a total of 2,650,942,498 lbs. of salable product valued at \$476,124,110 per year.

(Continued on Page 29, Column 1)



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DOWN TO 130° BELOW

### STANDARD FEATURES

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Ranges: —10° F. to —80° F.  
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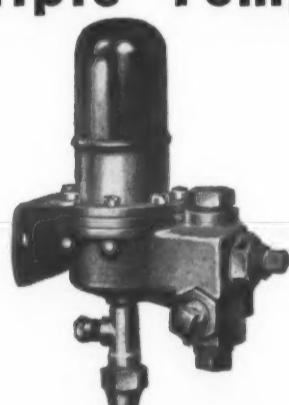
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## Refrigeration Need of Baking, Candy & Quick-Freezing Fields

(Concluded from Page 28, Column 5) on present-day prevailing prices, the average price for such equipment as outlined above would be \$6,000 per plant, or \$3,000,000 for the total 500 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

### (b) POULTRY PLANTS

The Committee estimated the typical average poultry dressing and packing plant necessitates the following refrigerating equipment or equivalent thereof:

1- $6\frac{1}{2} \times 6\frac{1}{2}$  inches single-acting vertical double-cylinder ammonia compressor.

1-30-hp. electric motor and starter.

1-Horizontal shell-and-tube type ammonia condenser.

1-Ammonia receiver.

10,000 lin. ft.-2 inch room coils with controls.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$10,000 per plant, or \$500,000 for the total 765 plants.

The average life of such plants is estimated at 12½ years and the normal replacement rate at 8% per annum.

### (c) FISH

Statistics furnished the Committee by the War Food Administration, which figures are based on the 1939 Census of Manufactures, reveal 91 fish freezing plants, varying in capacity from 10,000 lbs. per eight hours to more than 100,000 lbs. per eight hours.

The typical average plant necessitates the following refrigerating equipment or equivalent thereof:

1- $7\frac{1}{2} \times 7\frac{1}{2}$  single-acting vertical double-cylinder ammonia compressor.

1-60-hp. electric motor and starter.

1-Horizontal shell-and-tube type ammonia condenser.

1-Ammonia receiver.

12,500 lin. ft.-2 inch room coils with controls.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$15,000 per plant, or \$1,365,000 for the total 91 plants.

The average life of such plants is estimated at 12½ years and the normal replacement rate at 8% per annum.

### (d) FRUITS AND VEGETABLES

In the absence of any authentic statistics, the Committee estimated there are 50 fruit and vegetable plants in operation and utilizing refrigeration for preservation without freezing or quick freezing. Further, the Committee estimated that the typical average fruit and vegetable plant necessitates the following refrigerating equipment or equivalent thereof:

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this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$7,000 per plant, or \$57,715,000 for the total 8,245 plants considered.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

### (7) CANDY AND CONFECTIONERY

Statistics furnished the Committee by the War Food Administration, which figures are based on the 1939 Census of Manufactures, reveal 1,252 candy and confectionery manufacturing plants, 583 having production valued at \$50,000 per annum or more, and 669 having production valued at less than \$50,000.

The Committee estimated that the 669 plants having production valued at less than \$50,000 per annum had little if any refrigeration equipment and, therefore, any such equipment was negligible from the viewpoint of the scope of this report. The following treatment, therefore, is only for the balance of 583 plants.

The typical average plant of the 583 plants treated with requires the following refrigerating equipment or equivalent thereof:

1- $6\frac{1}{2} \times 6\frac{1}{2}$  inch single-acting vertical double-cylinder ammonia compressor.

1-30-hp. electric motor and starter.

1-Horizontal shell-and-tube type ammonia condenser.

1-Ammonia receiver.

10,000 lin. ft.-2 inch room coils with controls.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$10,000 per plant, or \$500,000 for the total 50 plants.

The average life of such plants is estimated at 12½ years and the normal replacement rate at 8% per annum.

The typical average plant of the 583 plants treated with requires the following refrigerating equipment or equivalent thereof:

1- $6\frac{1}{2} \times 6\frac{1}{2}$  inch single-acting vertical double-cylinder ammonia compressor.

1-30-hp. electric motor and starter.

1-Horizontal shell-and-tube type ammonia condenser.

1-Ammonia receiver.

10,000 lin. ft.-2 inch room coils with controls.

Such equipment as outlined above is customarily sold direct to the user by the manufacturer on a delivered and erected basis, and hence would be reported by the manufacturer on this basis on CMP applications. Based on present-day prevailing prices, the average price for such equipment as outlined above would be \$10,000 per plant, or \$500,000 for the total 50 plants.

The average life of such plants is estimated at 15 years and the normal replacement rate at 6.7% per annum.

### (8) FROZEN FOOD (QUICK FREEZING)

Statistics furnished the Committee by the War Food Administration, which figures are based on the 1939 Census of Manufactures, reveal 36 quick freezing plants. From additional information obtained from private sources and confirmed by certain government officials, the Com-

mittee determined that there are in existence today 75 such plants having an average capacity of two tons of foodstuffs per hour. Because the productive capacity of 75, 2-ton-per-hour plants more nearly checks known figures of foodstuffs frozen, the Committee determined to use 75 plants for the purpose of this report.

The typical average quick freezing plant has a requirement of freezing two tons of foodstuffs per hour plus water cooling for precooling and storage after freezing, and necessitates the following refrigerating equipment or equivalent thereof:

1- $15 \times 10$  inch single-acting vertical double-cylinder ammonia booster compressor.

1-100-hp. electric motor and starter.

1- $7\frac{1}{2} \times 7\frac{1}{2}$  inch single-acting vertical double-cylinder ammonia booster compressor.

1-60-hp. electric motor and starter.

1-4 x 4 inch single-acting vertical double-cylinder ammonia compressor.

1-10-hp. electric motor and starter.

1-3 x 3 inch single-acting vertical double-cylinder ammonia compressor.

1-5-hp. electric motor and starter.

1-Watercooled gas intercooler.

1-Direct expansion gas and liquid cooler with controls.

4-Evaporative type ammonia condensers with fan motors and starters.

1-Ammonia receiver.

1-Freezing unit or tunnel, complete with cooling coils, fans, fan motors and starters.

1-Low pressure trap with controls.

2-Liquid ammonia circulating pumps with motors and starters.

1-Water cooling tank with cooling coils, low pressure trap, and controls.

1,150 lin. ft.-2 inch room coils with low pressure trap and controls.

Average price would be \$58,125 per plant, or \$4,358,750 for the total.



**"BIRD - IN - HAND"**  
FORMULA

Post war visionaries would change the world over night. But Merchant & Evans Company, like other responsible manufacturers, will risk being called "conservative" by refusing to release untried, unproven mechanical changes just because they are new—or revolutionary. M&E's strong position as a maker of quality compressors has been built on the principle of 'time and test' before sale to the public.

**MERCHANT & EVANS COMPANY**  
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# Evaporative Condensers



Out of more than 25 years experience comes the development of this year's models of Acme Evaporative Condensers.

Wherever water supply presents a problem they furnish the most efficient and economical solution. For Acme has found a way to provide plenty of cooling surface without the use of fins and conserve valuable space.

Cooling coils are all prime surface and especially designed for evaporative condensers.

Definitely they're more efficient. A wide range of capacities. Write for catalog No. 27.

### BLO-COLD FORCED AIR COOLERS

Floor type units for high or low temperature requirements wherever forced air cooling is advisable. Dry coil type and brine spray models—a unit for any job. Our engineers are at your service if they can be of help to you. For complete recommendations, write for Catalog No. 32.

### ACME PRODUCTS

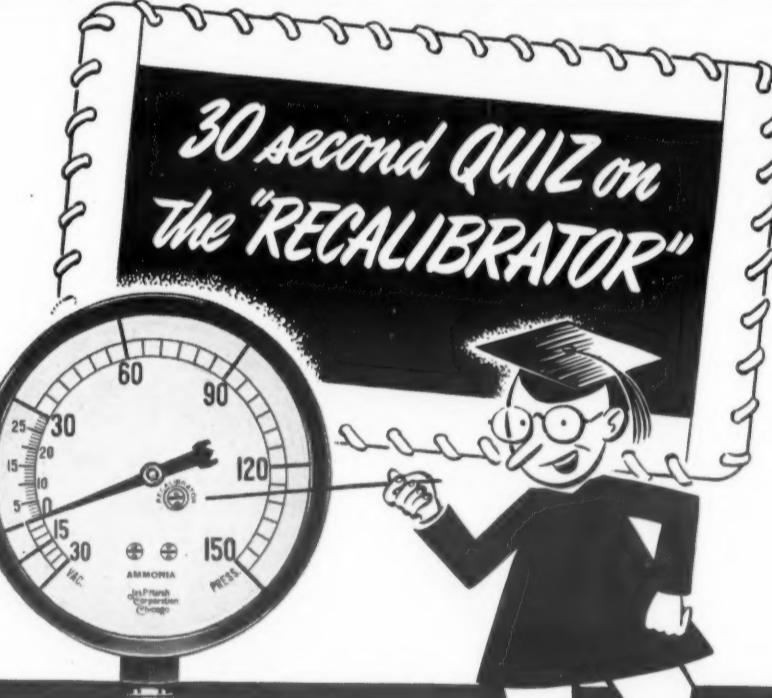
Evaporative Condensers  
Forced Convection Units  
Ammonia Condensers  
Freon Condensers  
Dry-Ex Water Coolers  
Flooded Water Coolers  
Hi-Peak Water Coolers  
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Write for Catalog on any item.



**ACME INDUSTRIES**  
JACKSON, MICHIGAN

**30 second QUIZ on  
The "RECALIBRATOR"**



WHAT IS THE "RECALIBRATOR"?

It's the first completely satisfactory and convenient way to correct a gauge that has been knocked out of adjustment. (Any gauge can be.)

ISN'T IT JUST ANOTHER "ADJUSTMENT"?

No sir. The "Recalibrator" doesn't merely attempt to compensate for the error. It re-establishes proper relation between Bourdon tube and movement—actually recalibrates the gauge throughout its range.

DOES IT MAKE THE GAUGE COMPLETELY ACCURATE AGAIN?

Right—at all points on the scale.

IS THIS CORRECTION EASY TO MAKE?

Simply turn that screw on the dial until the pointer is at zero when not under pressure. Almost quicker than you can say the word "Recalibrator", the job is done.

WHAT GAUGES OFFER THE "RECALIBRATOR"?

The "Recalibrator" is available in all Marsh Gauges; standard in all Marsh Dial Thermometers. It's the mark of an instrument that has behind it more than 75 years of gauge-making experience.

JAS. P. MARSH CORP., 2067 Southport Avenue, Chicago 14, Illinois

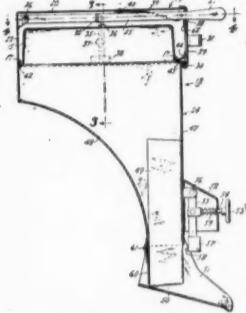
**MARSH** Refrigeration Instruments

## PATENTS

Weeks of Feb. 22-29

(Concluded from Mar. 27 Issue)

2,342,860. REFRIGERATION. William T. Hedlund, New Rochelle, N. Y., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application May 10, 1938, Serial No. 206,976. 18 Claims. (Cl. 62-105).



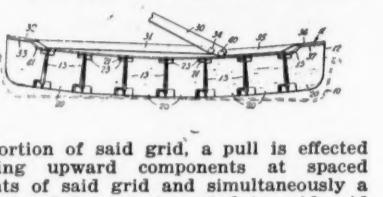
3. In refrigeration apparatus, the combination with a tray containing a block of frozen matter, of mechanism to mechanically loosen said block from the tray while the latter is in an inverted horizontal position, thereby permitting said block to fall by gravity, an impact member to sever said block into smaller pieces, means to guide said block whereby the latter assumes a vertical position adjacent said impact member, and a stop to limit downward movement of said block and permit successive portions thereof to move past said impact member after lower part of the block has been severed by said member.

2,343,018. ICE TRAY GRID. Frank E. Miller and Gust Roud, Evansville, Ind., assignors to Servel, Inc., New York, N. Y., a corporation of Delaware. Application April 15, 1940, Serial No. 329,642. 10 Claims. (Cl. 62-108.5).

6. The combination with a tray, of a distortable grid insertable into and removable from said tray, and force multiplying mechanism to cause distortion of said grid, said mechanism being so constructed and arranged that, when said grid is positioned in said tray and said mechanism is operated to produce force to cause

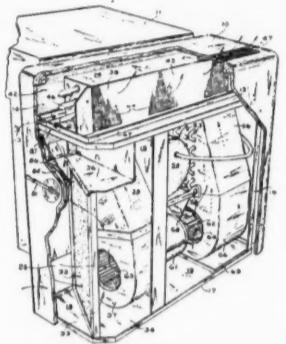
said plurality of other positions effecting a different proportioning of said cooled air from the proportioning effected by the remainder of said other positions.

2,343,122. AIR CONDITIONING APPARATUS. Arthur H. Eberhart, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Nov. 21, 1941, Serial No. 419,979. 9 Claims. (Cl. 62-129).



distortion of said grid, a pull is effected having upward components at spaced points of said grid and simultaneously a downward force is imparted to said grid at a region between said spaced points.

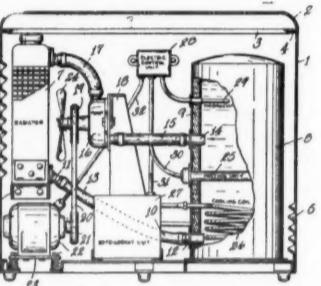
2,343,121. AIR CONDITIONING APPARATUS. Arthur H. Eberhart, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application July 27, 1940, Serial No. 347,997. 21 Claims. (Cl. 62-129).



1. In an air conditioning system for a chamber, the combination of a cooling unit, means for circulating air from within said chamber and from without said chamber in varying proportions over the cooling unit to cool said air and discharge the cooled air into said chamber, a movable control for said air-circulating means, said control being adapted when in one position to render said air-circulating means inactive and when in a plurality of other positions to render said air-circulating means active, the control in each of

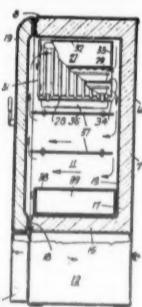
1. In a self-contained room cooler, the combination of a housing having a partition dividing the same into an apparatus compartment and a cooling compartment, the cooling compartment having an inlet and an outlet communicating with the room, a fan in said cooling compartment for effecting flow of air from the inlet to the outlet thereof, an evaporator disposed in the cooling compartment in the path of the air stream and on the downstream side of the fan, means at a point between the fan and the evaporator providing for exhaust of air from the room, means providing communication between the outside of the room and the upstream side of said fan to permit fresh air to be brought into the room, and manually operable control means, said control means being adapted in one position to permit the exhaust of air from the room and prevent admission of fresh air to the room, and in a second position to admit fresh air to the room and prevent exhaust of air from the room.

2,343,147. HEAT EXCHANGE UNIT. Nicholas T. Katsulos, Stevensville, Mich. Application Feb. 10, 1942, Serial No. 430,212. 6 Claims. (Cl. 257-3).



6. In a heat exchange device, the combination with a casing having air inlet and discharge openings, a heat exchange element operatively associated with said air discharge opening, a tank having a closed circulating connection with said heat exchange element, a circulating pump operatively associated with said circulating connection to deliver to the air heat exchange element, a fan operatively associated with said heat exchange element and said discharge opening, a motor having driving connection with said pump and fan, heating element in said tank, and thermostatically controlled means operatively associated with and automatically controlling said heating element, motor and refrigerating unit whereby the device is selectively and automatically operated as a heating unit or as a cooling unit.

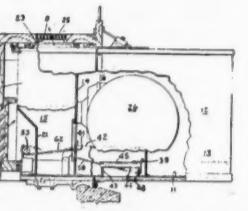
2,343,166. REFRIGERATOR CABINET. John H. Ashbaugh, Longmeadow, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Sept. 4, 1941, Serial No. 409,485. 11 Claims. (Cl. 62-89).



1. In a refrigerator cabinet, the combination of insulated top, bottom, and side walls defining a food-storage chamber, one of said side walls having an access opening, an insulated door for said opening, said door, when the door is closed, being of less heat-insulating value per unit of area than any other side wall of said food-storage chamber, a cooling unit in heat exchange relationship with the air in the upper portion of the chamber and a rectangular shelf

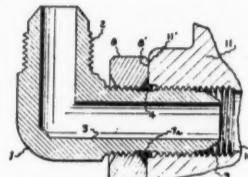
of continuous solid material below said upper portion of the chamber and spaced from the bottom wall thereof to provide a combined air passage and storage space for foods, said shelf being constructed to provide also an air passage adjacent said door and a further air passage adjacent the central portion of the side wall opposite said door, the shelf having a close fit with the other opposed side walls and preventing the circulation of air past the shelf adjacent the major portions of the width of said last-mentioned opposed walls.

2,343,235. UNIVERSAL PIPE FITTING. Nicholas Bashark, Dayton, Ohio, assignor to the Weatherhead Co., Cleveland, Ohio, a corporation of Ohio. Application Nov. 28, 1941, Serial No. 420,828. 6 Claims. (Cl. 255-55).



1. In a coupling comprising a male member having two threaded areas separated by a smooth unthreaded area, a lock nut in threaded engagement with one of said threaded areas, a sealing member encircling said unthreaded area, and a female member having an internally threaded bore for receiving the other of said threaded areas of said male member, at least parts of the juxtaposed faces of said lock nut and female member forming, when said nut and member are in contact, faces of an annular cavity of which said unthreaded area also forms a face, and which cavity contains said sealing member, said sealing member being forcibly confined in said cavity as said lock nut advances and contacts with said female member and being deformed and forcibly distorted in its confinement from its original shape to a different and stressed shape and having sufficient elasticity to forcibly react against the walls of said cavity to develop sealing pressures thereagainst while filling less than the whole volume of said cavity, said sealing member resisting contact with the faces of said cavity at least adjacent the point of contact with said lock nut and female member at least in the absence of fluid pressure exerted thereupon.

2,343,246. DEFROSTING AND FROST PREVENTION. Milton S. Schechter and Herbert L. J. Haller, Washington, D. C. Application Aug. 31, 1940, Serial No. 354,949. 15 Claims. (Cl. 62-103). (Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O.G. 757).



1. A coupling comprising a male member having two threaded areas separated by a smooth unthreaded area, a lock nut in threaded engagement with one of said threaded areas, a sealing member encircling said unthreaded area, and a female member having an internally threaded bore for receiving the other of said threaded areas of said male member, at least parts of the juxtaposed faces of said lock nut and female member forming, when said nut and member are in contact, faces of an annular cavity of which said unthreaded area also forms a face, and which cavity contains said sealing member, said sealing member being forcibly confined in said cavity as said lock nut advances and contacts with said female member and being deformed and forcibly distorted in its confinement from its original shape to a different and stressed shape and having sufficient elasticity to forcibly react against the walls of said cavity to develop sealing pressures thereagainst while filling less than the whole volume of said cavity, said sealing member resisting contact with the faces of said cavity at least adjacent the point of contact with said lock nut and female member at least in the absence of fluid pressure exerted thereupon.

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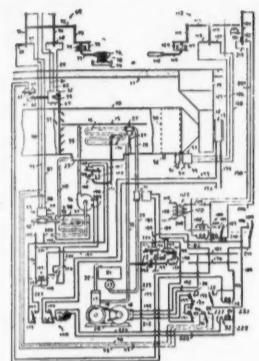
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## Patents (Cont.)

(Concluded from Page 30, Column 4)

door opening, the metal of the edge portion of the outer shell being bent to form a pocket and including a section extending toward the inner shell, the metal of the inner shell being bent to provide a flange extending toward the outer shell but spaced therefrom, a short turned flange carried by said flange extending rearwardly from said door opening in substantially parallel relation with the side wall of the inner shell, a thin metal breaker strip having the edges thereof provided with diagonally inwardly turned flanges, the flange along one edge of the breaker strip being inserted in said pocket and engaging a wall thereof and causing the body of the breaker strip to engage the opposite wall of the pocket, and a clip removably connected to said short turned flange and having a portion extending substantially parallel with the flange of the inner shell and spaced therefrom and projecting between the breaker strip and the other diagonal flange thereof for securing the breaker strip against the flange of the inner shell.

**2,343,467. AIR CONDITIONING CONTROL SYSTEM.** William L. McGrath, Philadelphia, Pa., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application June 28, 1941, Serial No. 400,283. 22 Claims. (Cl. 257-3).



20. In an air conditioning system, in combination, cooling means, means for passing air over the cooling means, means for spraying water into the air, means for heating the water, moisture responsive means in control of said cooling means and water heating means for operating

**PHOTOGRAPHIC PROCESSING EQUIPMENT**  
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COOLING & FREEZING UNITS  
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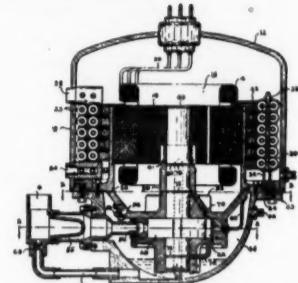
1864  
REFRIGERATION ENGINEERING Inc.  
U.S. PAT. 2,219,393  
REFRIGERATION ENGINEERING Inc.  
LOS ANGELES - CALIFORNIA

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**Commercial**  
**REFRIGERATION**  
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AMANA SOCIETY, AMANA, IOWA

ating said cooling means to produce a relatively low temperature when dehumidification is desired and for operating said water heating means to heat the water when humidification is desired, and air temperature responsive means for operating said cooling means at a relatively high temperature and for preventing heating of the water by said water heating means when the air temperature is too high.

**2,343,514. REFRIGERATING APPARATUS.** Alex A. McCormack, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application March 14, 1941, Serial No. 383,381. 14 Claims. (Cl. 62-115).



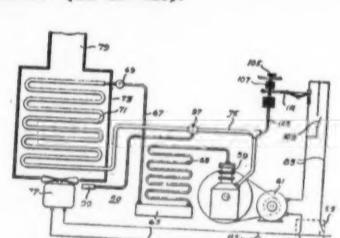
1. In a reverse cycle refrigeration system in which refrigerant may flow in either of two directions, a first heat exchange unit, a second heat exchange unit, refrigerant compressing mechanism, refrigerant flow connections between said heat exchange units and said compressing mechanism, means forming a lubricant sump from which lubricant is supplied to said compressing mechanism, means for so driving the compressing mechanism as to cause flow of refrigerant in either direction through said system, means for maintaining lubricant in said sump at a pressure substantially equal to the pressure at the discharge side of said compressor, means for restricting the flow of refrigerant from one of said heat exchange units to the other of said heat exchange units, means for flowing air to be conditioned over one of said heat exchange units, means for flowing an extraneous medium in thermal exchange with refrigerant in the other of said heat exchange units and means responsive to the pressure within said lubricant sump controlling the flow of said extraneous medium.

**2,343,565. FREEZING TRAY WITH ICE RELEASE CAM STRUCTURE.** Logan L. Mallard, Norfolk, Va. Application Dec. 4, 1941, Serial No. 421,643. 8 Claims. (Cl. 62-108.5).



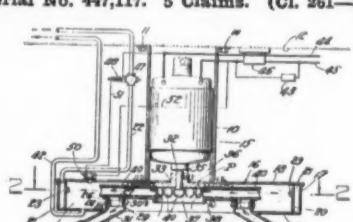
3. Means for dislodging ice from a container in which water or other material is frozen, comprising a partition adapted to span the interior of the container and be submerged in the fluid during freezing, said partition having oppositely projecting members on its lower edge to be embedded in the ice adjacent the bottom of the container, a lever pivoted to and overlying the upper edge of the partition, and a link pivotally connected to the operating end of the lever and extending down for contact with the bottom wall of the container whereby when the lever is raised said member is pressed against the bottom of the container to force the partition upwardly and dislodge ice from the container.

**2,343,581. REFRIGERATING APPARATUS.** Donald H. Reeves, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Jan. 28, 1939, Serial No. 253,359. 3 Claims. (Cl. 62-129).



1. Apparatus for providing for human comfort comprising in combination with an enclosure to be cooled, means for circulating fresh air into said enclosure, a volatile refrigerant evaporator for cooling said air, a suction line connected to said evaporator, a valve in said suction line for throttling the flow of refrigerant therethrough to regulate the quantity of refrigeration produced in said evaporator, and means for reducing the temperature differential between the air inside and outside of said enclosure as the temperature outside of the enclosure decreases consisting of a thermostat responsive to the temperature of the fresh air before it is cooled for throttling the said suction valve to reduce the amount of refrigeration produced in said evaporator.

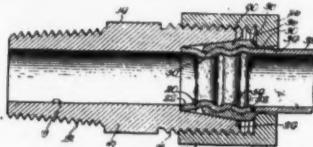
**2,343,595. AIR CONDITIONING UNIT.** William Warren Cummings, Jr., Cambridge, Mass. Application June 15, 1942, Serial No. 447,117. 5 Claims. (Cl. 261-30).



1. An air conditioning apparatus comprising a chamber, means for conducting air and a relatively cool liquid in separate paths so as to meet while traveling at high velocity in opposite directions in said chamber thereby momentarily compressing the air and simultaneously removing heat therefrom, separate outlets for said air and liquid after impact to flow from said chamber, and means responsive to the temperature and relative

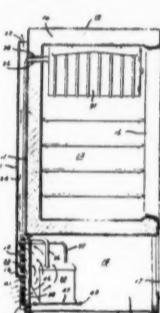
humidity of the air outside the apparatus for controlling the flow of air and liquid into said chamber.

**2,344,032. COMPRESSION COUPLING.** Harold W. Eden, Chicago, Ill., assignor to the Imperial Brass Mfg. Co., Chicago, Ill., a corporation of Illinois. Application Nov. 26, 1941, Serial No. 420,481. 3 Claims. (Cl. 285-86).



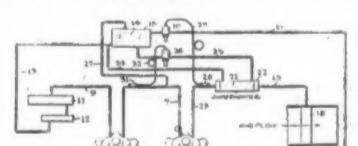
1. A coupling for relatively thin walled substantially rigid tubing adapted to be made and remade comprising a body, a sleeve, and a nut adapted to be threadably attached to the body, said body having a passage therethrough and an annular enlargement at one end of the passage having the wall thereof flared outwardly providing a recess substantially wedge shaped in cross section between the wall of the tubing and said wall of the enlargement, said nut having a passage therethrough for the tubing including a recess at one end and an abutment at the bottom of the recess, said sleeve comprising a single ring of metal circumferentially continuous throughout its width and having a plurality of open annular depressions in the inner wall thereof surrounding the tube, one end of said sleeve being smaller than the large end of said annular enlargement on the body and the other end being larger than the adjacent end of the passage through the nut, said sleeve having an initial position with the end only of said sleeve extending into the enlargement and an assembled position wherein the sleeve has a position closer to the bottom of the enlargement said sleeve being displaced axially relative to the initial position thereof and wherein the tubing is in snug contact with the bottom of the enlargement, said sleeve throughout its length having a portion deflected into the wall of the tubing, said deflection being greater at the end of the enlargement nearest the end of the tube than at the other end.

**2,344,145. REFRIGERATING APPARATUS.** Elmer L. Horacher, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application April 29, 1943, Serial No. 484,991. 5 Claims. (Cl. 62-89).



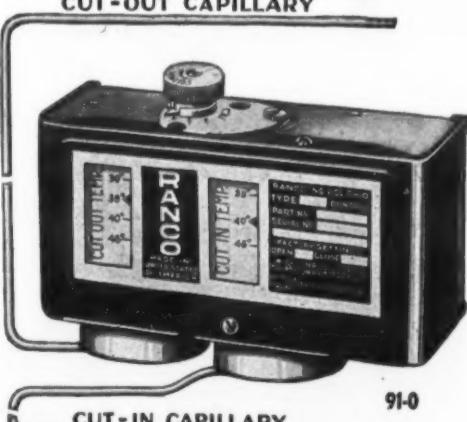
1. A refrigerating apparatus comprising in combination, a cabinet having a plurality of walls forming a food storage chamber and a machine compartment therein, a refrigerating system associated with said cabinet including an evaporator for cooling the interior of said food chamber, a refrigerant compressing unit within said compartment, a condenser and conduits connecting said evaporator, said unit and said condenser in closed circuit relation, said machine compartment having an opening in one wall thereof, means forming an air flue along a wall of said cabinet, said condenser being mounted along the opening in said compartment wall, said flue forming means having a part thereof extending over a portion of the opening in said compartment wall and overlapping a portion of said condenser to provide the flue with an air inlet facing said compartment and communicating with the interior thereof, and said part of said flue forming means partitioning said condenser into a portion disposed within said flue adjacent the inlet thereof and another portion exteriorly of said flue forming means and disposed in the path of air adapted to enter said compartment through the opening in said wall thereof.

**2,344,214. REFRIGERATION.** Henry B. Pownall, York, Pa., assignor to York Corp., a corporation of Delaware. Application Feb. 26, 1943, Serial No. 477,243. 8 Claims. (Cl. 62-115).



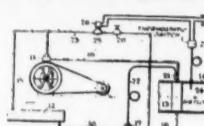
3. A refrigeration system of the com-

## CUT-OUT CAPILLARY



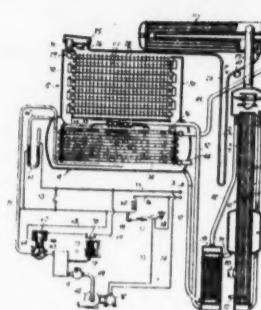
pressor, condenser, evaporator circuit type having refrigerant paths which are distinct at least to the extent that there are two evaporators and distinct connections for delivering liquid refrigerant to, and for withdrawing vaporized refrigerant from, respective evaporators; and heat exchanging means for delivering heat from liquid refrigerant flowing to one of said evaporators to the cold vaporized refrigerant flowing from the other of said evaporators.

**2,344,215. REFRIGERATION.** Samuel P. Soling and Henry B. Pownall, York, Pa., assignors to York Corp., a corporation of Delaware. Application Feb. 26, 1943, Serial No. 477,244. 13 Claims. (Cl. 62-6).



1. The combination of a refrigerative circuit of the compressor, condenser, evaporator type, including an expansion valve interposed between the condenser and the evaporator, and thermostatic means subject to the temperature of refrigerant between the evaporator and compressor and exerting a controlling influence on the expansion valve; a by-pass whose flow capacity is less than the output of the compressor for delivering compressed uncondensed refrigerant to a point in the circuit between the expansion valve and said thermostatic means; and means for controlling flow through the by-pass.

**2,344,245. REFRIGERATION.** Franklin A. Grossman, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application May 13, 1941, Serial No. 393,160. 10 Claims. (Cl. 62-5).



1. In refrigeration apparatus of the two-pressure absorption type having a plurality of interconnected parts to form a system for circulation of a refrigerant and an absorption solution, means for transferring non-condensable gases from a part of the system at one pressure to another part of the system at a different pressure, a vacuum pump connected to said other part for removing non-condensable gases from the system, and means responsive to pressure in said other part for causing operation of said vacuum pump when the pressure in said other part is within a predetermined range and stopping said operation when the pressure is below or above said range.

Humi-Temp Forced Convection Units—Patented CROSS-FIN COILS—Bare Tube Coils—Zinc Fused Steel Plate Coils—Disseminator Pans—Heat Exchangers—Evaporative Condensers—Instantaneous Water Coolers—Air Conditioning Coils—Industrial Units.

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★ Here is CARL ELIASON, Vice-President of Tyler Fixture Corporation, and widely known for his knowledge of food products merchandising and his ability to sink golf balls down the middle of the fairway. During the war, he is playing an important role as a Development Engineer and Washington representative. When the current job is finished, he will be back to see his old friends with a great new story.

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**STANDARD PRIME SURFACE Cold Plates FOR MAXIMUM EFFICIENT REFRIGERATION**

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Standard Facilities are contributing to the production of materials for our National Defense.

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46-76 Oliver Street, Newark, N. J.

## SIGNAL CORPS

Ranco Controls can be depended on to signal just the right order—at just the right moment—to hold refrigeration right at the point where it is wanted. They are precision instruments—alert, quickly responsive, dependable, accurate. They are engineered, simply and soundly, to have a life expectancy that is longer than is common.

Some Ranco models are available. Some one of them can be adapted to meet almost any replacement need. Work with your jobber.

**Ranco Inc. COLUMBUS, OHIO**

## Special Procedure Holds on '26' Group

(Concluded from Page 1, Column 2) refrigeration equipment. In such a case it would be advisable to have the request for deferment made by an industry group or even a group of users of equipment served by the repairman.

Following is the list of the WPB representatives in each state designated to have the power to endorse the Form 42-A Special. (Where no address is given, it may probably be procured from the nearest regional WPB office).

Pennsylvania, R. P. Brown, (no address); Delaware, T. E. Doremus, Wilmington; Maryland, G. W. Creighton, (no address); Virginia, C. S. Welton, Richmond; Kansas, O. P. Allee, Kansas City; Nebraska, W. R. Harris, Omaha; Arkansas, C. S. Christian, Little Rock; Missouri, L. E. Crandall, St. Louis.

New York, E. S. Pleasonton, New York City; New Jersey, M. E. Cutler, Trenton; Texas, R. C. Stryker, Dallas; Louisiana, A. T. Dusenbury, New Orleans; Oklahoma, A. E. Ballin, Tulsa.

Idaho, R. W. Briggs, Boise; Nevada, E. S. Bender, Reno; Arizona, Donald Scott, Phoenix; California, E. R. Halloran, San Francisco; Ohio, W. B. Hart, Cleveland; West Virginia, F. B. Enslow, Charleston; Kentucky, Henry Edson, Louisville; Minnesota, H. M. Richardson, Minneapolis.

North Dakota, R. L. Schwichtenberg, Bismarck; South Dakota, J. A. Scott, Sioux Falls; Montana, Oscar Baarson, Helena.

Maine, E. C. Hyde, Portland; New Hampshire, T. H. Hagan, Manchester; Massachusetts, R. M. Hudson, Boston; Rhode Island, J. C. Nash, Providence; Vermont, R. C. Lane, Montpelier; Connecticut, C. A. Woodruff, Hartford.

North Carolina, T. J. Love, Raleigh; South Carolina, T. K. Legare, Columbia; Georgia, J. H. Olden, Atlanta; Alabama, J. P. Barnes, Birmingham; Mississippi, A. G. McIntosh, Jackson; Tennessee, P. P. Henderson, Nashville; Florida, T. L. Staton, Jacksonville; Washington, K. B. Colman, Seattle; Oregon, Paul Hirsch, Portland.

Michigan, Carsten Tiedeman, Detroit; Indiana, A. O. Evans, Indianapolis; Wisconsin, F. W. Greusel, Milwaukee; Iowa, W. E. Muir, Des Moines; Illinois, A. W. Brandt, Chicago; Utah, R. E. Birston, Salt Lake City; Wyoming, E. S. Moore, Cheyenne; New Mexico, M. H. Sprague, Albuquerque; Colorado, E. S. Boerster, Denver.

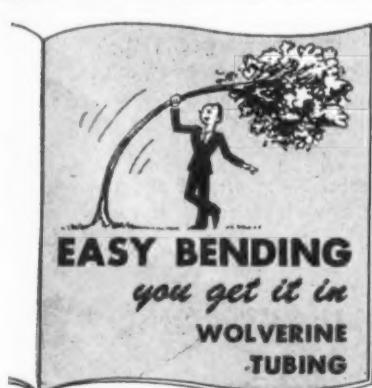
## New Firm to Distribute Deepfreeze in 12 Michigan Counties

DETROIT — Deepfreeze - Detroit, Inc., has been appointed exclusive distributor for domestic units in Wayne and 11 other Michigan counties by the Deepfreeze Division of Motor Products Corp.

A new company has been formed to operate this franchise, which has taken over the premises at 846 W. McNichols Road formerly operated as a factory branch.

Officers of Deepfreeze, Inc., are Eugene H. Welker, president; Frank J. Brady, vice president and general manager; Judge Ernest P. Lajoie, secretary-treasurer. The operating personnel formerly in the enterprise has been taken over by the new concern and it will continue to serve customers on the books of the former organization.

Welker is president of the Welker Machinery Co., which will continue to act as distributor for industrial Deepfreeze units.



## Jobbers To Discuss Ideas on Postwar Expansion of Their Business

(Concluded from Page 1, Column 2) F. Smith, Chief, Refrigeration and Air Conditioning Section, WPB.

Report on Activities of the Cata-logue Committee, H. R. McCombs, chairman.

Luncheon.

(Afternoon)

Report on Assigned Tasks of Manufacturers Relations Committee (Discussion of "Freon" Situation), H. W. Small, chairman.

Report on Membership Campaign, Frank J. Walter, chairman.

Discussion of Jobbers Future Policy Problems, Geo. J. Roche, Parks & Hull Appliance Corp., Baltimore, Moderator.

"(a) Shall the jobber also manufacture?

"(b) Shall the jobber distribute domestic refrigerators?

"(c) Shall the jobber distribute frozen food cabinets?

"(d) Shall efforts be made to induce prominent manufacturers to sell jobbers (1) parts, and (2) hermetic units for replacement?"

### APRIL 26

Meeting Called to Order, R. H. Luscombe, president, R.E.M.A.

Word of Welcome, Harry Alter.

"Government Plans in the Post-War Period," H. B. McCoy, U. S. Department of Commerce.

"New Fields for the Refrigeration Industry," George F. Taubeneck, editor, AIR CONDITIONING & REFRIGERATION NEWS.

"The Office of Civilian Requirements and Its Interest in Our Civilian Economy Under Wartime Conditions," Henry A. Dinegar, Office of Civilian Requirements, WPB.

"The National Refrigeration Council," Harry Alter.

Talk by nationally known news commentator at 12 noon.

On Wednesday afternoon, April 26, the N.R.S.J.A. members will meet informally to exchange ideas.

It is possible that other government officials may be procured to speak on the joint program, the committee declared.

Jobbers were urged to make early reservations at the Stevens hotel to assure their having hotel facilities when they attend the meetings.

## 1943 Sales of Lynch Jump Million Over Totals For 1942

ANDERSON, Ind.—Lynch Corp., owner of Lynch Mfg. Corp., producer of Par refrigeration equipment, has reported sales of \$4,366,177.39 for 1943, a gain of nearly a million over the 1942 figure of \$3,428,565.50.

Net profit for the year amounted to \$454,905.35, a slight gain over 1942, but the \$803,000 set aside for Federal income and excess profits taxes, renegotiation, and contingencies more than doubled the reserve held in 1942.

The earnings were equal to \$3.03 a share, out of which a \$2 dividend was paid.



## THE PATH OF PROGRESS...

The last mile on the road to Victory will be the first mile on the road to bigger, better business. Reconversion has already begun. The lessons learned in war are beginning to be applied. Refrigeration stands on the threshold of tomorrow... on the brink of a boom.

Refrigeration will play a major role in the post-war world. Development is in the cards... so competent economists tell us... comparable to that of the automobile after World War I. Refrigeration must replace thousands of present out-worn and out-moded commercial installations... and supply new thousands to come. Refrigeration will enter transportation as never before... revolutionize the processing and merchandising of foods and other perishable products. Refrigeration will open up whole new fields of conquest in industry... virgin territory for the refrigeration engineer.

Every day now will mean dollars to you later. Picture yourself after the war... looking back at today in perspective. Whether your feeling will be one of satisfaction or regret will depend upon your activity NOW. More contacts... in the path of refrigeration's progress... is the answer. Do this... once more picture yourself after the war... and what you now see you can bank on.

The Bush Manufacturing Company, Hartford, Connecticut... 415 Lexington Avenue, New York... 549 W. Washington Blvd., Chicago.

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PENGUIN PETE

Bush

HEAT TRANSFER PRODUCTS

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# REFRIGERATION & COMMERCIAL NEWS

## HEAT TRANSFER PRODUCTS

# HSNB

PENGUIN PETE

The Bush Manufacturing Company, Hartford, Connecticut . . . 415 Lexington Avenue, New York . . . 549 W. Washington Boulevard, Chicago.

Thus a bright day draws for reintegration. The future is so clearly divided that related industries are already laying plans to get on the band wagon.

A 40 ton payload of self-erectored food at 80 a mile will be carried on a projected plane by Colonial Airlines according to the company's recent announcement. A lateral loading device, permitting 3 1/2 ton containers to be lifted directly from trucks, as block-buster bombs are now handled, will be a feature.

# FREEGHT PLANES for FROZEN FOOD